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USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 65. T-37B AIR--ETC(U)  
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USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK  
VOLUME 65. T-37B AIRCRAFT, NEAR AND  
FAR-FIELD NOISE

AEROSPACE MEDICAL RESEARCH LABORATORY,  
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

NOVEMBER 1975

AMRL-TR-75-50  
Volume 65



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# USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK

Volume 65  
T-37B AIRCRAFT, NEAR AND FAR-FIELD NOISE

NOVEMBER 1975



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total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. Refer to Volume 1 of this handbook, "USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application", AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc.

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## **PREFACE**

This report was prepared by the Biodynamic Environment Branch, Aerospace Medical Research Laboratory, under Project/Task 723104, Measurement of Noise and Vibration Environments of Air Force Operations.

The author gratefully acknowledges Mr. John Cole for his assistance in preparing this report, Mr. Robert England for his assistance in acquiring the raw data, Mr. Henry Mohlman and Mr. David Eilerman of the University of Dayton for assistance in the mechanics of data processing and Mrs. Norma Peachey and Mr. Mike Patterson for assistance in typing and preparation of the graphics.

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## INTRODUCTION

The USAF T-37B is a trainer-type aircraft to teach all techniques and maneuvers of fighter aircraft and is powered by two J69-T-25 turbojet engines. The aircraft was manufactured by the Cessna Company and the engines by the Continental Aviation and Engineering Corporation.

This volume provides measured and extrapolated data defining bioacoustic environments produced by this aircraft during ground runup operations. Such data are essential to evaluate ear protection requirements, limiting personnel exposure times, voice communication capabilities, and annoyance problems associated with ground runups of the T-37B aircraft.

This volume is one of a series published by the Aerospace Medical Research Laboratory (AMRL) under the same report number (AMRL-TR-75-50) as a multi-volume handbook that quantifies the noise environments produced at flight/ground crew locations and in surrounding communities by operations of Air Force aircraft and aerospace ground equipment. The far-field, community-type noise data in the handbook describe the noise produced during *ground operations* of aircraft, aerospace ground equipment, and other ground-based equipment or facilities.

Volume 1 of this handbook discusses the objectives and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc. Volume 2 provides a method and data for adjusting the handbook's far-field noise data, which are for standard meteorological conditions (15°C temperature, 70% rel humidity, 0.760 meters Hg barometric pressure), to derive comparable data for other meteorological conditions. *Refer to Volumes 1 and 2* (references 1 and 2) for such information because it is not repeated in other handbook volumes.

A cumulative index lists those aerospace systems contained in the handbook, and identifies the specific volumes containing each type of environmental noise data available (i.e., inflight/flight crew and passenger noise, near-field/ground crew noise, far-field/community noise). Volume numbers are assigned sequentially as individual volumes are published. This index is periodically updated as individual volumes are published and is available upon request from AMRL/BBE, Wright-Patterson AFB, OH 45433. Organizations on the distribution list for the handbook will automatically receive a copy of each updated index.

Direct any questions concerning the technical data in this report and other handbook volumes to: AMRL/BBE, Wright-Patterson AFB, OH 45433; AUTOVON 78-53675 or 78-53664; Commercial (513) 255-3675 or (513) 255-3664.

1. Cole, John N., *USAF Bioenvironmental Noise Data Handbook Volume 1: Organization, Content and Application*, AMRL-TR-75-50 (1), Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975.
2. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 2: Procedure to Evaluate Effects of Non-standard Meteorological Conditions on Far-Field Noise*, AMRL-TR-75-50 (2), AMRL, WPAFB, OH, 1975.



## NEAR-FIELD NOISE

### MEASUREMENTS

AMRL acquired near-field noise data on the T-37B aircraft during ground runup operations of its turbojet engines. For these tests the aircraft was located on a taxiway at Wright-Patterson AFB with no significant reflecting surfaces in the vicinity except the ground plane. Table 1 gives the surface meteorological conditions and the three engine/power conditions. The ground-crew chief selected power conditions and near-field locations generally used during routine maintenance or engine runup for preflight checks.

At each near-field location a test engineer randomly moved a hand held microphone in and around each location, probing all areas where a crew member's head would normally be located. He recorded all of the noise samples on magnetic tape. During analysis of each sample, he determined the root-mean-square sound pressure using a 4- or 8-second integration time to derive a power-averaged level for each location. Figure 1 shows the four near-field locations where ground crews are usually located for maintenance and/or preflight checkout operations. Estimates of noise levels at other locations in the near-field are difficult since the noise source is spatially distributed, i.e., not a point source. The noise levels at near-field locations can vary widely depending upon relative distances from each noise source (intake noise, exhaust noise, panel resonances, internal engine noise through the engine wall, etc.).

Table 1 lists the numeric/alphabetic designators used on the data pages in this report to identify the measurement locations and test conditions. For example, the designator 1/A means ground crew location 1 and test condition A.

### RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced by the T-37B aircraft at the four ground crew locations. This table includes the overall, 1/3 octave band, and octave band levels. From these data one can calculate the variety of measures given in Table 3, which are widely used to assess the effects of noise on personnel and their performance.

All near-field data are for the meteorological conditions at the time of test but are valid for all typical airbase meteorology because of the short sound propagation distances involved.

TABLE 1

MEASUREMENT LOCATIONS AND TEST CONDITIONS  
FOR NEAR-FIELD NOISE MEASUREMENTST-37B Aircraft, Ground Runup, Wright-Patterson AFB, OH  
23 August 1972  
Tail #74670*Ground Crew Location*

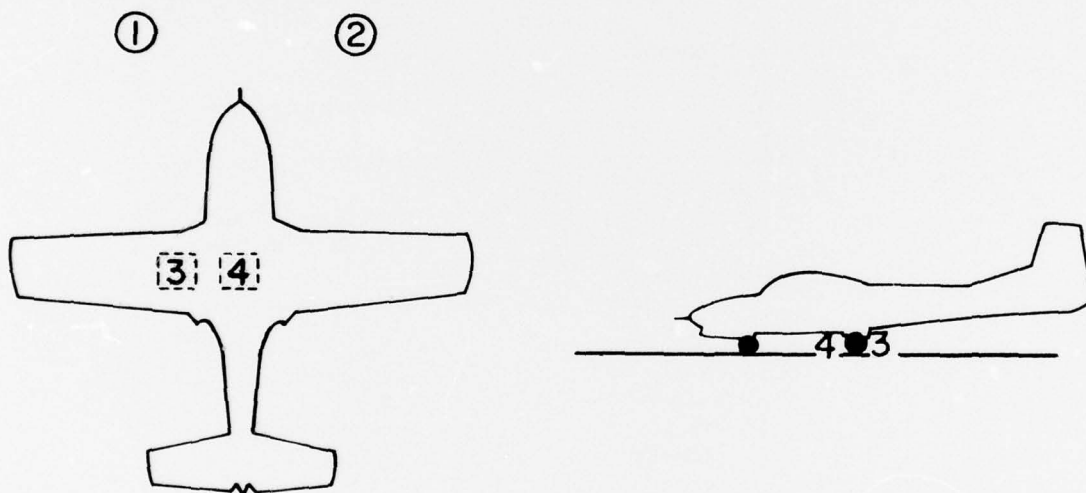
1	Engine #1 Start
2	Engine #2 Start
3	Wheel Chock Pull
4	Leak Check/Trim Operation

*Aircraft Engine Operation*

A	Engine #1 Idle Power
B	Both Engines Idle Power
C	Both Engines Takeoff Rated-Thrust Power

*Meteorology*

Temperature	25 C
Bar Pressure	.760 M Hg
Rel Humidity	84 %
Wind — Speed	3.6 M/Sec (7 kt)
— Direction	200 Deg



**Figure 1. Near-Field Measurement Locations at Intersection of Taxiways 8 and 12, Wright-Patterson AFB, OH**

## **FAR-FIELD NOISE**

### **MEASUREMENTS**

AMRL acquired both near and far-field data during a 1- 2-hour test period, thus keeping similar meteorological conditions. Figure 2 shows the ground runup pad, ground cover, aircraft orientation and the 19 microphone measurement sites on a semicircle. The center of the 75 meter radius semicircle used in surveying the J69-T-25 engines was on the ground directly below the intersection of the aircraft's centerline and the plane passing through both engines' exhaust-nozzle exits.

Table 4 provides cockpit readouts of engine characteristics (% RPM, fuel flow, etc.) for each power setting used in the far-field tests. Also listed in this table are the surface meteorological conditions during data acquisition.

All microphone measurement sites are in the acoustic far-field of their source where the sound wave-fronts spherically diverge and the noise source may be regarded as a point source.

A portable microphone/tape-recorder system was used to sequentially record the noise at each far-field location. The microphone was attached to a hand held pole, pointed at the source ( $0^\circ$  angle of incidence) and vertically scanned from 0.5 to 3 meters for a period of 5-10 seconds during data acquisition at each microphone location. These samples were then time-integrated to derive a root-mean-square sound pressure level. Vertical scanning and time-integrating together reduce anomalies frequently present in data acquired by a fixed height microphone.

### **RESULTS**

Table 5 lists the overall and 1/3 octave band SPL measured at the far-field locations under meteorological conditions at the time of the test. Data in all other figures and tables are based on these levels. These data were normalized to 100 meters distance and standard meteorological conditions ( $15^\circ\text{C}$  temperature, 70% relative humidity, 0.760 meter Hg barometric pressure) and used to derive the graphic data in Figure 3 which provides a compact summary of the far-field noise characteristics of the T-37B aircraft in a standard format.

Figure 4 and Table 6 present two basic acoustic measures, the acoustic power level and the directivity index, respectively. The acoustic power level describes the power radiated by the source as a function of frequency. The directivity index is a standard acoustical engineering measure that describes the geometric way in which the source radiates this power as a function of both frequency and angle from source. These basic source measures are primarily of interest for acoustical engineers and noise generation/control specialists.



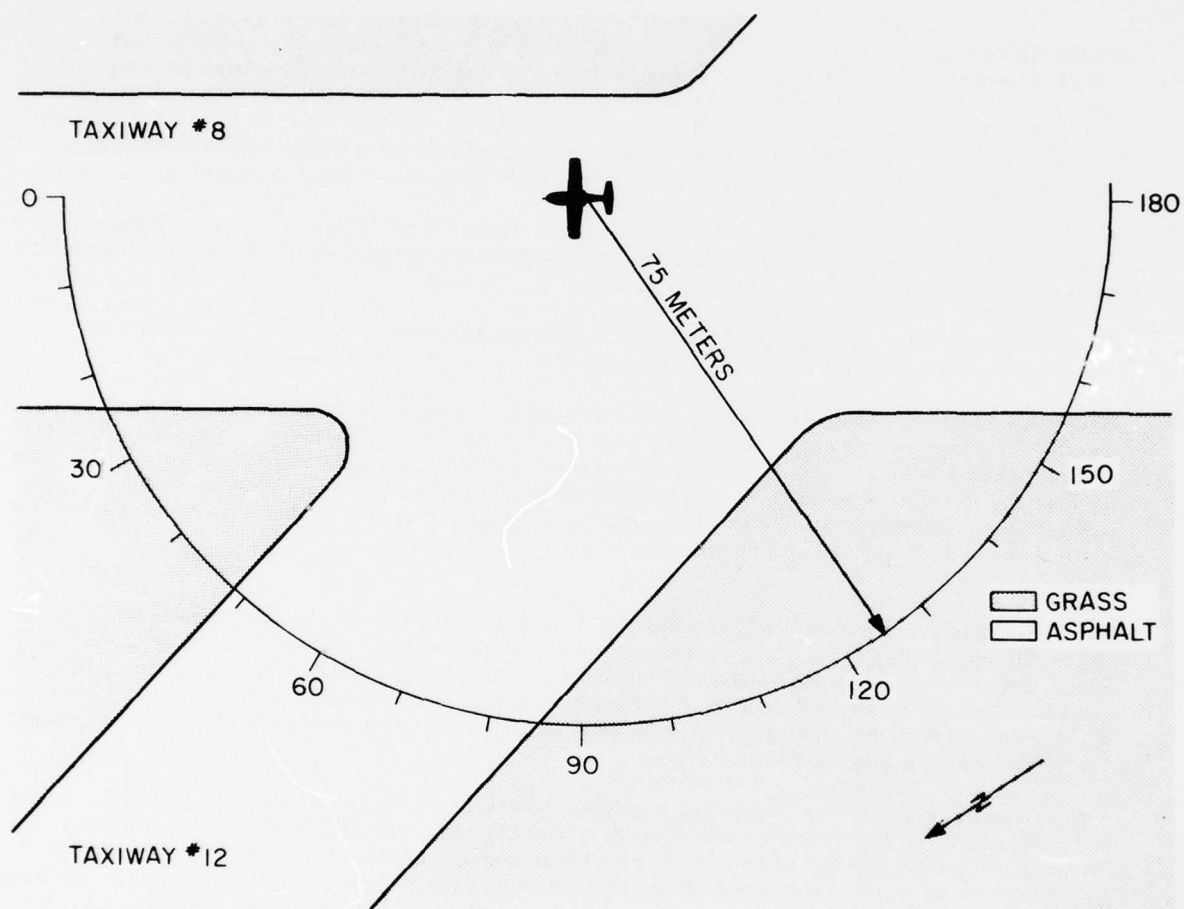


Figure 2. Far-Field Measurement Locations at Intersection of Taxiways 8 and 12, Wright-Patterson AFB, OH

Figures 5 through 11 are sets of equal noise contours describing seven different measures of noise as a function of angle and distance from the source for standard day meteorology. They are respectively, overall sound pressure level, C-weighted sound level, A-weighted sound level, perceived noise level, speech interference level, permissible exposure times for personnel and octave band sound pressure levels.

Data excessively influenced by spurious background/electronic noise were eliminated from all figures and tables. No data are presented at the 180 degree locations for the trim-check power setting because of turbulent air flow behind the aircraft.

Test personnel performed noise surveys during quiet periods when the background noise was minimal, e.g., early in the morning when no other aircraft or engine test stands were operating. Data eliminated because they were near the background/electronic noise were generally not significant because the levels were so low (e.g., Table 5 and Figure 11 at idle power).

Volume 2 of the handbook describes the influence of meteorology on far-field noise environments, and provides, if required, the factors necessary to adjust the handbook's standard meteorological day data.

TABLE: MEASURED SOUND PRESSURE LEVEL (D3)						
1/3 OCTAVE BAND						
2						
NOISE SOURCE/SUBJECT: ( OPERATION: )						
T-37B AIRCRAFT ( )						
GROUND CREW ( )						
NEAR FIELD NOISE LEVELS ( )						
LOCATION/CONDITION						
FREQ (HZ)	1/A	2/B	3/C	4/B	4/C	
25	73	73	86	89	93	
31.5	73	83	86	89	96	
40	75	86	83	92	101	
50	79	80	95	97	104	
63	83	85	97	99	105	
80	81	81	94	97	105	
100	83	83	96	98	104	
125	87	86	107	105	106	
160	83	83	100	101	106	
200	83	84	94	97	109	
250	82	84	95	96	113	
315	80	82	99	96	112	
400	35	86	98	98	114	
500	90	91	98	96	113	
630	93	93	93	96	112	
800	92	93	101	99	115	
1000	93	96	103	100	115	
1250	96	98	103	101	116	
1600	100	102	105	104	116	
2000	121	124	123	125	116	
2500	111	113	115	116	116	
3150	99	100	103	99	115	
4000	112	115	111	104	114	
5000	103	106	105	100	117	
6300	104	109	106	100	114	
8000	101	104	102	96	113	
10000	100	103	102	94	117	
OVERALL	122	125	124	126	127	
LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.						

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)		IDENTIFICATION:				
2 OCTAVE BAND		OMEGA 3.2				
NOISE SOURCE/SUBJECT:		TEST 72-010-010				
( OPERATION:		RUN 01				
T-37B AIRCRAFT		04 DEC 74				
GROUND CREW		PAGE J1				
NEAR FIELD NOISE LEVELS						
		LOCATION/CONDITION				
FREQ (HZ)		1/A	2/B	3/B	4/B	4/C
31.5		78	88	92	95	102
63		96	87	100	102	109
125		99	89	108	107	110
250		87	88	101	101	116
500		95	96	103	101	117
1000		99	101	107	105	120
2000		122	124	123	125	121
4000		113	115	112	106	120
8000		107	111	108	102	119
OVERALL		122	125	124	126	127



TABLE: MEASURES OF HUMAN NOISE EXPOSURE										IDENTIFICATION:	
3											
NOISE SOURCE/SUBJECT:										OPERATION:	
T-37B AIRCRAFT											
GROUND CREW											
NEAR FIELD NOISE LEVELS											
										LOCATION/CONDITION	
										1/A 2/B 3/B 4/B 4/C	
HAZARD/PROTECTION											
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN OBC) AT EAR											
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN OBA) AT EAR											
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)											
NO PROTECTION											
OASLC											
OASLA											
T											
MINIMUM QPL EAR MUFFS											
OASLA*											
T											
AMERICAN OPTICAL 1700 EAR MUFFS											
OASLA*											
T											
V-51R EAR PLUGS											
OASLA*											
T											
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS											
OASLA*											
T											
H-133 GROUND COMMUNICATION UNIT											
OASLA*											
T											
COMMUNICATION											
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)											
PSIL											
ANNNOYANCE											
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNOB)											
TONE CORRECTION (C IN DB)											
PNLT											
C											

TABLE 4  
TEST CONDITIONS  
FOR FAR-FIELD NOISE MEASUREMENTS

T-37B Aircraft, Ground Runups, Wright-Patterson AFB, OH  
23 August 1972  
Tail #74670

*Aircraft Engine Operation*

Idle	Both Engines 37 % RPM NC (Core Speed) 565 C EGT (Exhaust Gas Temperature) 300 LBS/HR FF (Fuel Flow)
Trim Check Power	Both Engines 92 % RPM NC 560 C EGT 800 LBS/HR FF
Military Power	99.5 % RPM NC 645 C EGT 1050 LBS/HR FF

*Meteorology*

Temperature	25 C
Bar Pressure	0.760 M Hg
Rel Humidity	84 %
Wind	Calm

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																			
1/3 OCTAVE BAND																			
DISTANCE = 75 METERS																			
NOISE SOURCE/SUBJECT:																			
T-37B AIRCRAFT																			
J69-T-25 ENGINE																			
FAR FIELD NOISE																			
OPERATION:																			
IDLE POWER																			
37% RPM																			
BOTH ENGINES																			
FREE FLOW																			
METEOROLOGY:																			
TEMP = 25 C																			
BAR PRESS = .760 1 HG																			
REL HUMID = 84 %																			
ANGLE (DEGREES)																			
FREQ (HZ)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25	73	69	74	64	62	59	60	63	60	62	62	61	61	65	65	72	66	70	66
31.5	73	68	70	62	60	57	57	59	59	60	57	58	59	63	64	70	63	67	66
40	70	65	67	60	58		57	58	57	58	57	58	59	64	61	67	61	65	63
50	65	64	65	59	60	59	60	62	64	62	64	61	65	65	64	67	64	63	60
63	65	66	66	61	64	63	64	64	65	66	64	64	73	68	67	67	65	61	62
80	63	61	64	59	60	60	61	61	61	61	61	59	62	66	67	67	65	59	
100	63	61	62	59	61	63	63	64	65	63	61	67	65	69	70	69	66		
125	64	64	64	64	70	74	70	76	76	75	70	73	77	80	80	77	73	59	
160	65	64	64	63	66	68	70	72	72	70	69	72	72	74	75	73	68	57	
200	67	67	69	67	66	67	67	71	72	70	67	71	70	69	69	71	67	53	
250	66	66	67	66	66	69	68	69	70	67	64	65	65	66	65	67	63	50	
315	67	67	66	64	63	63	69	68	68	66	64	62	60	66	62	64	61	50	
400	67	65	66	64	62	67	66	68	68	69	64	63	63	65	61	62	61	48	
500	66	68	68	64	62	70	68	70	69	69	66	64	64	65	60	59	56	44	
630	69	70	69	66	65	69	68	68	68	69	65	64	65	64	59	57	56	43	
800	71	71	69	66	65	69	68	69	69	69	66	65	67	65	59	57	55	42	
1000	73	74	71	70	69	72	71	74	73	71	68	66	67	64	59	58	55	44	41
1250	76	77	73	73	73	74	73	74	73	70	68	66	66	64	59	60	55	46	44
1600	79	78	73	74	74	73	71	73	71	71	68	65	64	63	59	58	54	45	43
2000	103	101	95	95	93	92	89	92	85	90	82	81	79	82	77	75	71	64	63
2500	92	91	85	86	84	83	80	84	77	81	73	73	70	71	68	66	62	55	53
3150	75	73	68	72	70	73	71	74	67	66	64	62	61	60	57	54	49	43	41
4000	84	87	83	83	80	80	78	79	78	74	65	65	65	62	58	53	47	45	
5000	76	80	76	77	75	75	74	73	72	70	64	63	61	61	59	55	49	44	41
6300	79	84	77	76	75	70	72	77	72	69	64	60	58	56	55	52	48	43	40
8000	75	78	72	73	72	70	70	70	67	64	61	57	54	54	51	49	44	39	38
10000	70	73	67	67	66	67	65	67	63	61	58	55	54	51	48	46	40	36	36
OVERALL	104	102	96	96	94	93	90	93	88	91	84	84	83	85	84	83	78	74	72

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																			
1/3 OCTAVE BAND																			
DISTANCE = 75 METERS																			
NOISE SOURCE/SUBJECT:																			
OPERATION:																			
TRIM CHECK POWER																			
92% RPM																			
BOTH ENGINES																			
FREE FLOW																			
METEOROLOGY:																			
TEMP = 25 C																			
BAR PRESS = .760 M HG																			
REL HUMID = 84 %																			
IDENTIFICATION:																			
OMEGA 1.4																			
TEST 75-002-046																			
RUN 02																			
09 MAY 75																			
PAGE 2																			
FREQ (HZ)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25	78	67	68	66	66	69	69	64	65	66	75	66	68	69	71	72	70	68	
31.5	78	66	66	68	66	68	69	66	68	67	73	68	70	72	73	76	74	71	
40	75	65	66	67	67	67	70	68	69	69	72	70	72	75	76	79	77	72	
50	72	66	66	68	68	69	70	70	71	72	73	72	75	77	80	81	79	72	
63	71	68	69	70	70	71	72	73	74	74	74	76	79	82	83	84	79	71	
80	70	69	69	71	71	73	73	74	75	74	74	77	81	84	86	86	80	68	
100	71	71	71	72	73	74	76	76	78	77	77	79	84	87	90	89	80	68	
125	72	72	73	73	73	75	76	76	79	80	80	80	85	88	91	90	79	69	
160	72	74	74	74	74	78	79	79	80	80	82	83	86	90	94	92	80	69	
200	74	74	76	75	75	78	79	80	82	82	83	84	87	90	95	93	80	69	
250	79	80	79	78	78	84	84	84	86	88	85	85	89	92	97	95	81	70	
315	80	79	80	79	77	84	85	84	86	88	85	85	84	87	93	92	80	69	
400	80	80	81	79	76	84	85	84	86	88	86	85	86	86	90	90	79	69	
500	78	79	80	77	76	84	85	85	86	89	86	84	87	89	89	86	75	67	
630	79	80	79	78	77	81	83	84	86	89	87	86	87	88	90	84	74	65	
800	78	77	78	77	78	80	83	84	85	87	87	87	88	86	88	82	71	62	
1000	78	77	79	77	79	80	83	85	85	87	89	89	89	87	87	83	71	61	
1250	78	78	78	79	79	80	84	86	85	88	89	89	89	87	87	82	69	60	
1600	76	75	76	77	77	76	81	83	82	84	88	87	87	85	84	80	67	57	
2000	78	75	75	76	77	76	80	81	82	82	88	88	87	86	83	79	66	57	
2500	77	73	74	75	76	75	79	79	81	81	86	86	85	84	81	77	64	55	
3150	78	73	73	73	76	76	78	79	81	82	85	85	84	82	79	75	63	53	
4000	80	72	71	73	77	77	78	78	80	83	82	82	81	79	76	73	61	52	
5000	91	83	84	88	92	88	90	92	89	89	85	84	79	78	76	72	61	52	
6300	81	74	77	80	82	78	81	81	79	81	80	79	75	74	71	68	57	49	
8000	74	72	74	76	76	74	77	77	77	79	79	77	74	71	70	66	55	47	
10000	79	76	76	77	80	78	79	79	80	82	79	77	73	69	67	63	53	46	
OVERALL	94	90	91	92	94	94	96	97	97	99	99	98	99	100	103	101	90	81	
LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.																			

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.



TABLE: MEASURED SOUND PRESSURE LEVEL (DB)																
1/3 OCTAVE BAND																
DISTANCE = 75 METERS																
NOISE SOURCE/SUBJECT:																
( OPERATION: )																
( MILITARY POWER )																
( 99.5% RPM )																
( BOTH ENGINES )																
( FREE FLOW )																
T-37B AIRCRAFT																
J69-T-25 ENGINE																
FAR FIELD NOISE																
FREQ (HZ)																
ANGLE (DEGREES)																
METEOROLOGY: TEMP = 25 C																
BAR PRESS = .760 M HG																
REL HUMID = 84 %																
IDENTIFICATION:																
OMEGA 1.4																
TEST 75-002-046																
RUN 03																
09 MAY 75																
PAGE 2																
25	62	63	61	64	65	66	67	66	66	69	67	69	70	72	72	74
31.5	66	65	65	68	67	68	70	69	68	70	69	71	74	75	76	75
40	69	66	68	67	68	69	70	71	70	71	72	74	76	79	79	74
50	70	68	69	68	71	72	73	73	73	74	75	77	80	82	83	80
63	73	71	70	73	74	75	75	75	75	76	78	82	83	86	85	81
80	78	74	72	72	74	75	76	77	77	77	79	84	86	88	87	81
100	75	74	73	74	76	79	79	80	79	79	81	86	90	93	90	82
125	76	75	75	75	78	79	80	80	81	82	83	88	92	95	91	82
160	77	77	77	76	78	80	82	83	81	83	84	85	95	98	92	81
200	78	78	77	77	81	82	84	84	84	85	87	90	95	98	91	81
250	84	85	83	81	86	85	87	88	88	88	89	94	98	101	93	84
315	84	84	84	82	81	87	86	88	88	89	87	88	94	97	91	81
400	83	84	82	79	88	88	89	89	89	88	88	92	93	93	91	81
500	84	85	85	81	79	87	88	89	91	89	89	94	96	92	91	80
630	83	85	84	81	80	85	87	89	90	91	90	94	97	94	91	79
800	83	81	83	82	82	85	87	90	90	91	93	93	95	93	91	77
1000	81	81	83	82	83	86	87	90	91	93	94	95	95	93	90	75
1250	82	81	81	82	83	85	88	90	91	92	94	93	95	94	86	74
1600	80	77	79	82	81	83	84	87	89	90	93	91	92	91	83	72
2000	80	77	79	81	81	82	83	87	87	88	92	91	93	91	84	71
2500	79	75	76	79	79	81	82	83	85	85	86	88	91	89	82	69
3150	78	75	74	77	78	79	80	85	83	84	86	90	87	87	85	81
4000	77	75	72	76	77	80	79	82	80	83	84	85	84	82	78	66
5000	85	80	77	82	81	84	83	83	83	83	85	86	84	79	75	64
6300	87	83	80	83	82	86	84	83	84	83	85	84	81	77	70	62
8000	77	72	73	74	73	76	77	78	80	79	80	82	79	75	67	60
10000	74	71	71	72	75	74	76	77	77	78	78	76	75	70	62	56
OVERALL	95	94	94	93	97	98	100	100	101	102	102	104	106	107	102	93
LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.																
																81

TABLE: DIRECTIVITY INDEX (DB)																			IDENTIFICATION:	
6																			OMEGA 1.4	
																			TEST 75-002-046	
NOISE SOURCE/SUBJECT:																			RUN 01	
( OPERATION: )																				
( IDLE POWER )																			25 C	
( 37% RPM )																			BAR PRESS = .760 M HG	
( BOTH ENGINES )																			09 MAY 75	
( FREE FLOW )																			REL HUMID = 84 %	
FAR FIELD NOISE																			PAGE 4	
FREQ	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	
( HZ )																				
1/3 OCTAVE																				
25	7	4	9	-1	-4	-6	-5	-2	-5	-3	-3	-4	-4	-0	0	7	1	5	1	
31.5	11	5	7	-1	-2	-5	-5	-4	-4	-3	-5	-5	-4	0	1	8	1	5	3	
40	9	5	6	-0	-2	-4	-3	-3	-3	-2	-3	-2	-2	3	1	7	1	4	3	
50	2	1	2	-4	-3	-4	-3	-1	1	-1	-1	-2	2	2	1	4	1	0	-3	
63	-1	-1	-0	-5	-3	-3	-3	-3	-1	-0	-2	-2	6	2	0	1	-1	-5	-5	
80	-0	-2	1	-3	-3	-2	-2	-1	-1	-1	-1	-4	-0	3	5	5	3	-4		
100	-3	-4	-3	-6	-4	-2	-3	-1	-1	-3	-4	2	-0	4	5	4	1			
125	-11	-12	-12	-5	-5	-2	0	0	0	-5	-3	-0	1	4	4	2	-3	-17		
160	-6	-7	-7	-8	-5	-3	-1	1	1	-1	-2	1	1	3	4	2	-3	-14		
200	-2	-2	-0	-2	-4	-2	-3	2	3	0	-3	1	1	-0	-0	1	-3	-16		
250	-1	-1	-0	-1	-1	2	1	2	3	0	-3	-2	-2	-1	-2	-0	-4	-17		
315	1	1	0	-2	-3	3	3	2	2	3	-0	-4	-6	-0	-4	-2	-5	-16		
400	1	-1	0	-2	-3	1	1	2	3	-1	-2	-3	-3	-1	-5	-3	-5	-18		
500	-0	1	1	-3	-5	3	1	3	2	2	2	-0	-3	-1	-7	-8	-11	-23		
630	2	3	2	-1	-2	2	1	2	1	2	-1	-3	-1	-2	-7	-10	-11	-23		
800	4	4	2	-1	-2	2	1	2	2	2	-1	-2	-4	-3	-8	-10	-12	-25		
1000	3	4	1	-0	-1	2	1	4	3	1	-2	-4	-3	-6	-11	-12	-15	-26	-29	
1250	5	6	2	2	2	3	2	3	2	-1	-3	-5	-5	-7	-12	-11	-16	-25	-27	
1600	9	8	3	3	3	2	1	3	3	1	0	-2	-5	-8	-11	-13	-17	-25	-27	
2000	13	11	5	5	3	2	-1	2	2	-5	-0	-8	-9	-11	-13	-15	-19	-26	-27	
2500	11	10	4	5	3	2	-1	3	-4	-2	-5	-6	-7	-10	-13	-15	-19	-26	-28	
3150	6	4	-0	3	1	5	2	5	-1	-2	-5	-6	-7	-9	-12	-15	-19	-25	-28	
4000	7	10	6	5	3	3	0	2	0	-4	-12	-12	-13	-12	-16	-19	-24	-31	-32	
5000	4	9	5	5	3	3	2	2	0	-2	-8	-9	-11	-11	-13	-17	-22	-28	-31	
6300	6	11	4	3	2	3	-1	4	-1	-4	-9	-13	-15	-17	-18	-21	-25	-30	-33	
8000	7	10	4	5	4	2	2	2	-1	-4	-7	-11	-14	-14	-17	-19	-24	-29	-30	
10000	6	9	4	3	2	3	2	3	-1	-3	-6	-8	-9	-13	-16	-17	-23	-27	-28	
OCTAVE																				
31.5	9	4	8	-1	-3	-3	-6	-3	-4	-3	-4	-5	-3	1	1	7	1	5	2	
63	-0	-1	1	-4	-3	-3	-3	-2	-1	-1	-2	-3	5	2	2	3	0	-3	-5	
125	-8	-9	-9	-10	-5	-2	-0	0	0	-4	-2	0	1	4	4	2	-2	-16		
250	-1	-1	-0	-2	-3	1	1	2	3	0	-3	-0	-1	-0	-1	0	-3	-16		
500	1	2	1	-2	-3	3	1	2	2	2	-1	-3	-2	-1	-6	-6	-8	-21		
1000	4	5	2	1	0	2	2	3	2	1	-2	-4	-3	-5	-11	-11	-15	-25	-29	
2000	13	11	4	5	3	2	-1	2	-5	-0	-8	-9	-11	-8	-13	-15	-19	-26	-28	
4000	6	9	5	5	3	3	1	2	0	-3	-10	-11	-12	-12	-15	-18	-23	-29	-31	
8000	6	11	4	4	2	3	0	4	-1	-4	-8	-12	-14	-16	-18	-20	-24	-29	-31	
OVERALL	12	10	4	4	3	2	-1	2	-3	-0	-7	-7	-8	-6	-8	-9	-13	-17	-20	

TABLE: DIRECTIVITY INDEX (DB)																		
IDENTIFICATION:																		
6																		
NOISE SOURCE/SUBJECT:																		
( OPERATION: )																		
( TRIM CHECK POWER )																		
( 92% RPM )																		
( BOTH ENGINES )																		
( FREE FLOW )																		
METEOROLOGY:																		
( TEMP = 25 C )																		
( BAR PRESS = .760 M HG )																		
( REL HUMID = 84 % )																		
PAGE 4																		
FREQ (HZ)																		
ANGLE (DEGREES)																		
1/3 OCTAVE																		
25	9	-2	-2	-3	-3	-0	-0	-5	-4	-3	5	-3	-2	-0	2	3	1	-1
31.5	8	-4	-4	-3	-3	-2	-2	-4	-2	-3	2	-2	-0	2	3	5	4	1
40	3	-7	-6	-5	-5	-5	-5	-5	-3	-3	-0	-2	0	3	4	7	5	0
50	-2	-9	-8	-6	-7	-7	-7	-5	-5	-3	-2	-2	1	3	6	6	4	-2
63	-6	-10	-9	-8	-7	-7	-7	-5	-5	-3	-4	-1	1	4	6	7	2	-6
80	-9	-11	-10	-9	-8	-7	-7	-6	-4	-5	-5	-2	2	4	6	7	0	-12
100	-11	-12	-11	-10	-9	-8	-8	-6	-4	-5	-6	-3	1	4	8	7	-3	-14
125	-12	-12	-11	-11	-9	-7	-7	-5	-4	-4	-4	-4	1	5	8	6	-4	-14
160	-13	-12	-11	-12	-11	-8	-7	-7	-6	-5	-4	-2	0	4	8	6	-6	-17
200	-13	-12	-11	-12	-11	-8	-8	-6	-5	-5	-4	-2	0	3	8	6	-6	-17
250	-14	-9	-10	-11	-11	-5	-5	-5	-3	-1	-4	-4	0	3	8	6	-8	-19
315	-7	-7	-6	-5	-7	-2	-1	-2	-1	1	-1	-2	-3	0	7	6	-6	-17
400	-6	-6	-5	-7	-10	-2	-1	-2	0	2	0	-1	0	0	4	4	-7	-17
500	-8	-7	-5	-8	-10	-2	-1	-1	0	3	0	-2	1	3	3	0	-11	-19
630	-7	-6	-7	-8	-9	-5	-3	-2	0	2	1	-0	1	2	4	-2	-12	-21
800	-7	-8	-7	-8	-7	-5	-2	-1	0	2	2	2	3	1	3	-3	-14	-23
1000	-8	-9	-7	-8	-7	-6	-2	-1	-1	1	3	3	3	1	2	-3	-15	-24
1250	-8	-8	-8	-7	-7	-6	-2	-0	-1	2	3	3	3	1	1	-4	-17	-26
1600	-8	-9	-8	-7	-7	-8	-3	-1	-2	-0	4	3	3	1	0	-4	-17	-27
2000	-6	-9	-9	-8	-7	-8	-4	-3	-2	-2	4	4	3	2	-1	-5	-18	-27
2500	-5	-9	-8	-7	-6	-7	-3	-3	-1	-1	4	4	3	2	-1	-5	-18	-27
3150	-3	-8	-6	-8	-5	-5	-3	-2	-0	1	4	4	2	1	-2	-6	-18	-28
4000	0	-7	-8	-6	-2	-2	-1	-1	1	4	3	2	1	-0	-4	-7	-19	-28
5000	3	-5	-4	0	4	1	2	5	1	2	-2	-4	0	-9	-10	-12	-15	-27
6300	2	-5	-2	1	3	-1	2	2	0	2	1	1	0	-4	-8	-11	-22	-30
8000	-2	-4	-2	-0	-0	-2	1	1	1	3	3	1	-2	-5	-6	-10	-21	-29
10000	1	-2	-2	-1	2	0	1	1	2	4	1	-1	-5	-9	-11	-15	-25	-32
OCTAVE																		
31.5	6	-5	-4	-4	-5	-2	-1	-4	-3	-3	2	-2	-0	2	3	5	4	0
63	-6	-10	-9	-8	-8	-6	-5	-5	-4	-4	-4	-2	2	4	6	7	2	-7
125	-12	-12	-11	-11	-11	-8	-7	-7	-5	-5	-4	-3	1	4	8	6	-4	-15
250	-9	-9	-9	-10	-11	-5	-4	-4	-3	-1	-3	-0	0	2	8	6	-7	-18
500	-7	-6	-6	-8	-10	-3	-1	-1	0	3	0	-1	1	2	4	2	-9	-19
1000	-8	-8	-7	-7	-7	-6	-2	-1	-1	2	3	3	3	1	2	-3	-15	-25
2000	-6	-9	-8	-7	-7	-8	-3	-2	-2	-1	4	4	4	3	2	-0	-5	-17
4000	2	-5	-5	-1	3	-0	1	4	1	2	0	-1	-3	-4	-7	-11	-23	-32
8000	1	-3	-2	-0	2	-1	1	2	1	3	1	0	-3	-6	-8	-11	-22	-31
OVERALL																		
	-4	-8	-7	-6	-4	-4	-2	-1	-1	1	1	0	1	2	5	3	-8	-17

TABLE: DIRECTIVITY INDEX (DB)																		IDENTIFICATION:	
6																		OMEGA 1.4	
NOISE SOURCE/SUBJECT:																		TEST 75-002-046	
( OPERATION: )																		RUN 03	
( MILITARY POWER )																			
( 99.5% RPM )																		TEMP = 25 C	
( 80% ENGINES )																		BAR PRESS = .760 M HG	
( FREE FLOW )																		REL HUMID = 84 %	
T-37B AIRCRAFT																		09 MAY 75	
J69-T-25 ENGINE																			
FAR FIELD NOISE																		PAGE 4	
FREQ (HZ)																		ANGLE (DEGREES)	
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
1/3 OCTAVE																			
25	-6	-5	-7	-7	-4	-3	-3	-1	-2	-2	1	-2	0	2	4	4	5	2	3
31.5	-5	-6	-6	-6	-3	-4	-3	-1	-2	-3	-1	-2	0	3	4	5	4	3	3
40	-5	-7	-6	-6	-5	-4	-3	-3	-4	-2	-2	-1	1	3	5	5	3	1	-1
50	-7	-9	-7	-8	-6	-6	-4	-4	-4	-4	-4	-3	2	4	6	6	3	-2	-8
63	-7	-8	-9	-9	-7	-6	-5	-4	-4	-4	-5	-3	2	5	7	5	1	-10	-12
80	-3	-7	-10	-9	-7	-6	-5	-5	-5	-5	-5	-3	2	2	4	6	1	-10	-12
100	-10	-11	-11	-11	-9	-9	-6	-5	-5	-5	-6	-3	2	5	8	5	-3	-22	-19
125	-11	-12	-11	-11	-9	-7	-6	-6	-6	-5	-5	-3	1	6	8	4	-5	-18	-27
160	-12	-12	-11	-11	-9	-7	-6	-5	-5	-6	-5	-4	-0	6	9	3	-7	-18	-25
200	-12	-11	-11	-11	-12	-9	-7	-5	-5	-6	-5	-2	1	6	9	1	-8	-18	-24
250	-9	-7	-10	-11	-11	-6	-7	-6	-4	-4	-4	-3	1	5	9	0	-8	-17	-22
315	-6	-5	-6	-7	-9	-3	-3	-2	-2	-0	-2	-2	-0	5	7	1	-8	-17	-22
400	-6	-5	-5	-7	-10	-1	-1	-0	-0	-0	-1	-1	3	4	4	2	-8	-16	-21
500	-6	-5	-5	-9	-11	-3	-3	-1	-1	0	-1	-1	4	6	1	1	-10	-20	-23
630	-7	-6	-7	-9	-11	-5	-4	-1	-1	-0	0	-0	3	6	3	0	-12	-21	-23
800	-8	-9	-7	-9	-8	-5	-4	-1	-1	1	1	3	4	4	2	1	-14	-21	-25
1000	-10	-11	-8	-9	-8	-6	-4	-1	-1	-0	1	3	4	4	2	-1	-16	-23	-27
1250	-10	-11	-10	-9	-8	-7	-4	-1	-1	1	2	2	4	4	3	1	-5	-17	-24
1600	-10	-13	-10	-7	-8	-6	-5	-2	-1	0	4	2	4	3	1	-6	-18	-26	-29
2000	-8	-12	-10	-7	-7	-7	-5	-2	-1	-0	3	3	4	3	2	-5	-17	-25	-30
2500	-7	-11	-10	-7	-7	-6	-5	-1	-1	-0	2	5	4	3	1	-4	-17	-25	-29
3150	-7	-10	-10	-8	-7	-6	-5	-0	-2	-1	1	5	3	2	0	-3	-17	-24	-29
4000	-5	-8	-11	-7	-6	-3	-4	-1	-3	0	1	5	2	1	-1	-4	-17	-25	-29
5000	2	-3	-6	-1	-3	1	-0	-0	0	0	2	3	1	0	-4	-8	-19	-27	-31
6300	4	-0	-3	0	-1	3	1	0	1	-0	2	4	-1	-2	-6	-13	-21	-29	-33
8000	-1	-6	-5	-4	-5	-2	-1	0	2	1	2	4	2	1	-3	-11	-18	-27	-31
10000	-1	-5	-5	-4	-4	-1	-1	1	1	1	3	3	1	-1	-5	-13	-20	-28	-32
OCTAVE																			
31.5	-5	-6	-6	-6	-4	-4	-3	-2	-3	-2	-1	-2	1	3	5	5	4	2	2
63	-4	-8	-9	-9	-7	-6	-5	-4	-4	-5	-4	-2	2	4	7	6	1	-8	-13
125	-11	-12	-11	-12	-11	-9	-7	-6	-6	-6	-5	-3	1	6	9	4	-5	-19	-25
250	-8	-7	-8	-10	-11	-5	-6	-4	-4	-3	-4	-3	1	5	8	1	-8	-17	-23
500	-7	-5	-6	-9	-11	-3	-3	-1	-1	-0	-1	-1	3	5	3	1	-10	-19	-23
1000	-9	-10	-8	-9	-8	-6	-4	-1	-1	0	2	2	4	2	-1	-15	-23	-27	
2000	-9	-12	-10	-7	-8	-7	-5	-2	-1	-0	3	3	4	3	2	-5	-17	-26	-30
4000	-2	-6	-8	-4	-5	-2	-3	-0	-1	-0	2	5	2	1	-1	-5	-18	-25	-29
8000	3	-1	-4	-1	-2	2	1	0	1	0	2	2	0	-1	-5	-12	-20	-28	-32
OVERALL	-7	-8	-8	-8	-9	-5	-4	-2	-2	-1	0	1	3	4	5	0	-9	-18	-21



FIGURE 1 NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

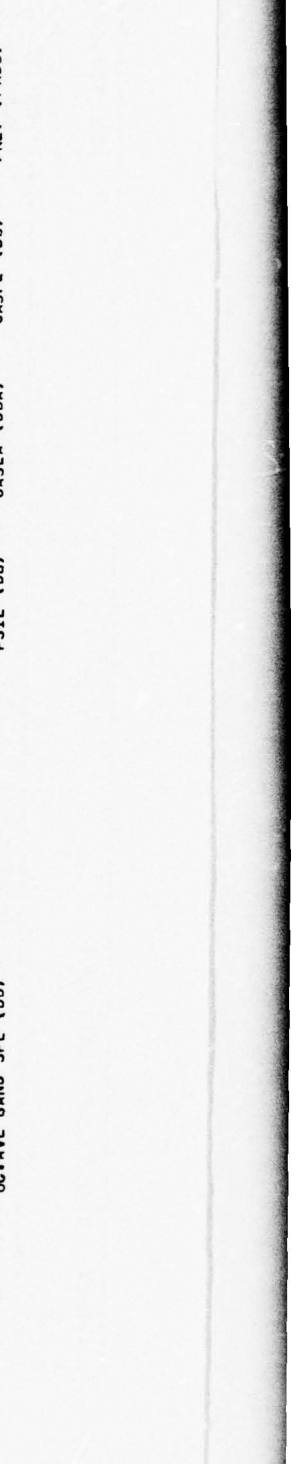
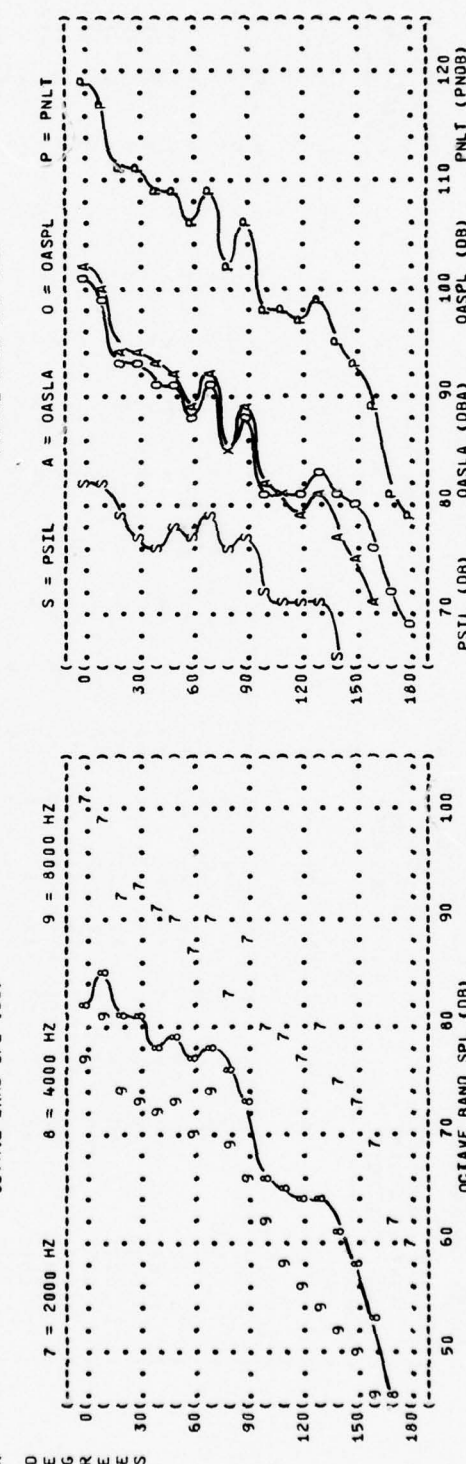
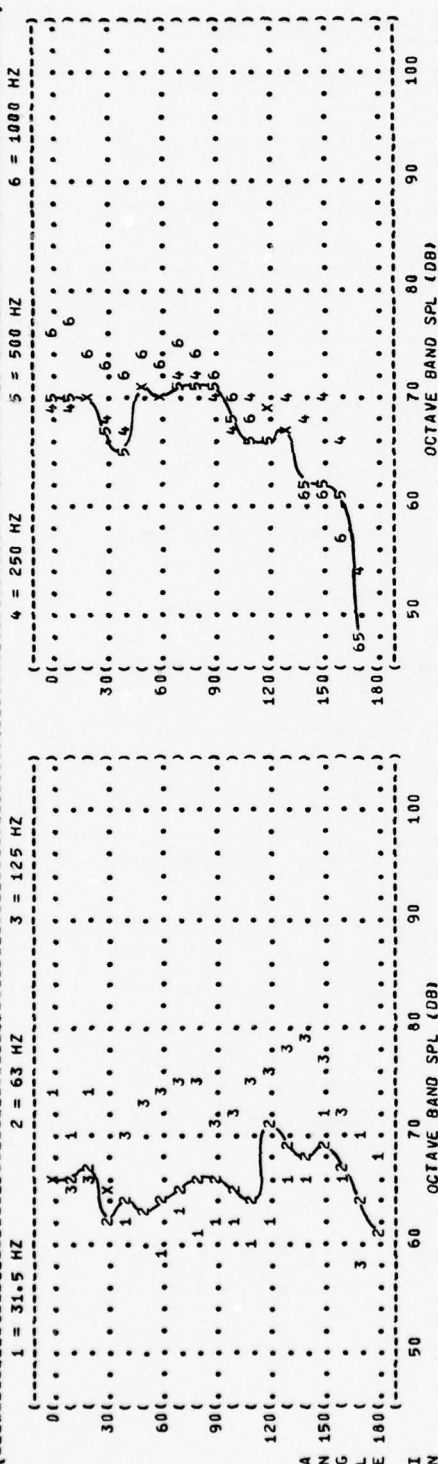
NOISE SOURCE/SUBJECT:

T-378 AIRCRAFT  
J69-T-25 ENGINE  
FAR FIELD NOISE

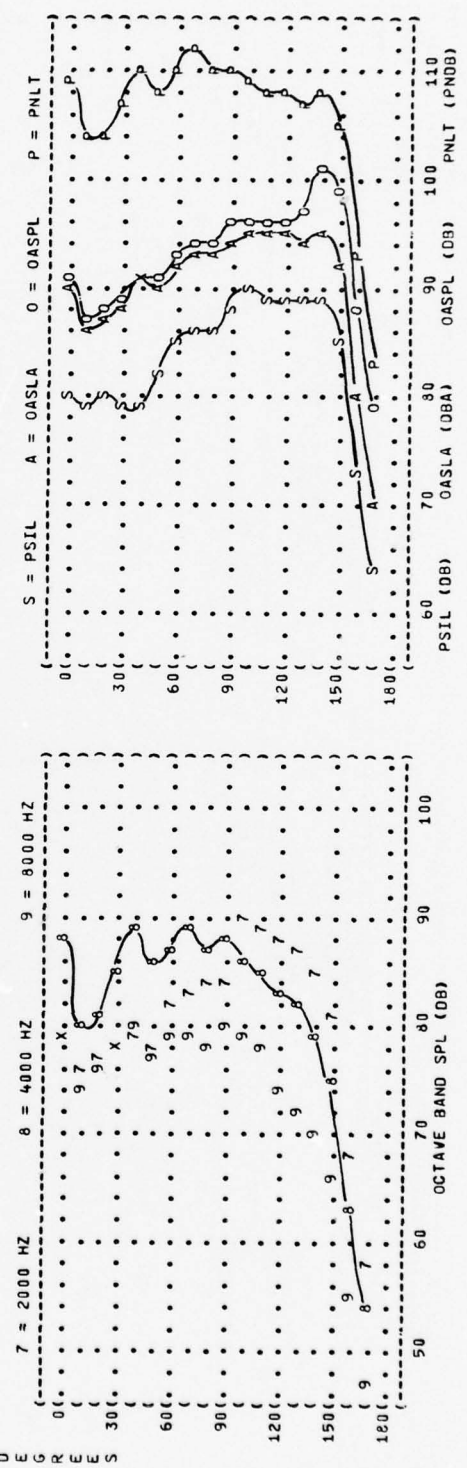
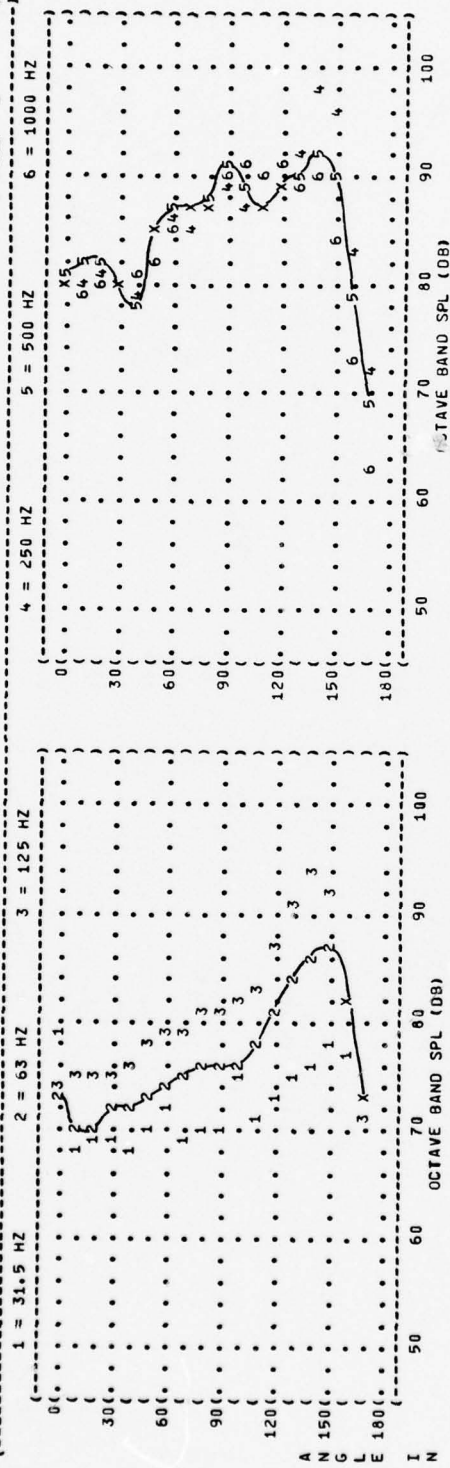
OPERATIONS:  
( IDLE POWER  
( 372 RPM  
( BOTH ENGINES  
( FREE FLOW

METEOROLOGY:  
( TEMP = 15 C  
( BAR PRESS = .760 M HG  
( REL HUMID = 70 %

IDENTIFICATION:  
( OMEGA 1.4  
( TEST 75-002-046  
( RUN 01  
( 09 MAY 75  
( PAGE 6



( ( FIGURE: NORMALIZED FARFIELD NOISE LEVELS  
 ( ( 3 DISTANCE = 100 METERS  
 ( ( NOISE SOURCE/SUBJECT:  
 ( ( T-37B AIRCRAFT  
 ( ( J69-T-25 ENGINE  
 ( ( FAR FIELD NOISE  
 ( ( OPERATION:  
 ( ( TRIM CHECK POWER  
 ( ( 92% RPM  
 ( ( BOTH ENGINES  
 ( ( FREE FLOW  
 ( ( METEOROLOGY:  
 ( ( TEMP = 15 C  
 ( ( BAR PRESS = .760 M HG  
 ( ( REL HUMID = 70 %  
 ( ( IDENTIFICATION:  
 ( ( OMEGA 1.4  
 ( ( TEST 75-002-046  
 ( ( RUN 02  
 ( ( 09 MAY 75  
 ( ( PAGE 6



IDENTIFICATION:  
 OMEGA 1.4  
 TEST 75-002-046  
 RUN 03  
 09 MAY 75  
 PAGE 6

NOISE SOURCE/SUBJECT:  
 T-37B AIRCRAFT  
 J69-T-25 ENGINE  
 FAR FIELD NOISE

OPERATION:  
 MILITARY POWER  
 99.5% RPM  
 BOTH ENGINES  
 FREE FLOW

METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = .760 H MG  
 REL HUMID = 70 %

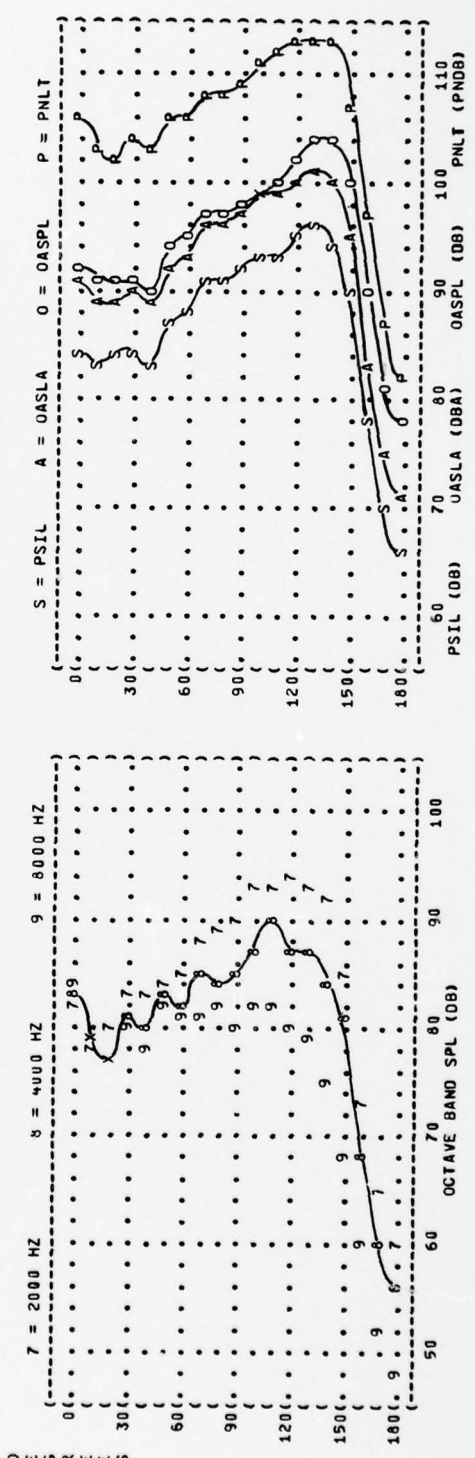
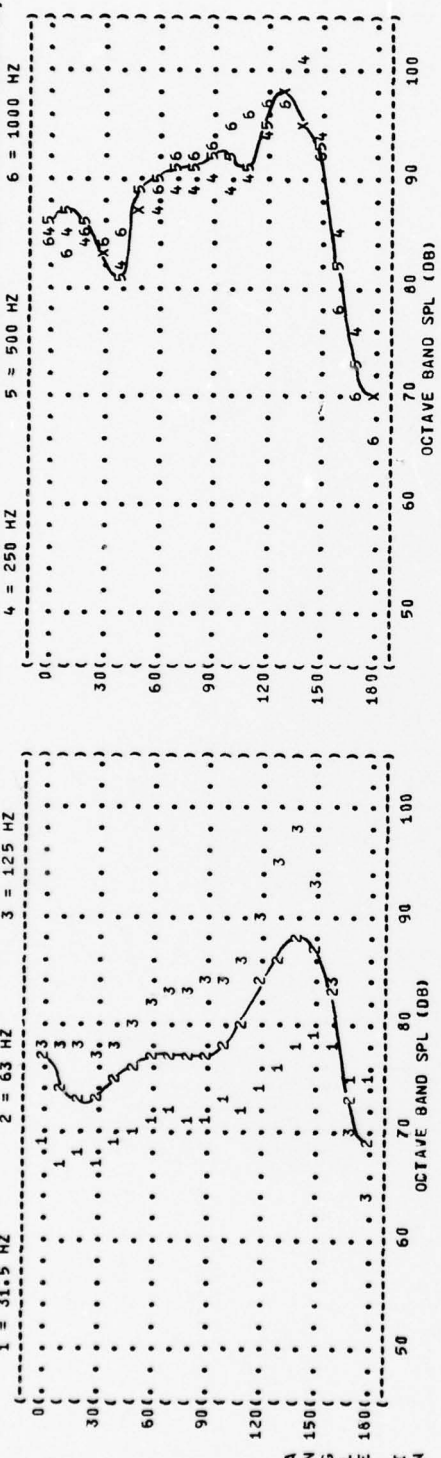


FIGURE: ACOUSTIC POWER LEVEL (PWL)

4

IDENTIFICATION:

OMEGA 1.4

TEST 75-002-046

RUN 01

09 MAY 75

PAGE 3

NOISE SOURCE/SUBJECT:

OPERATION:

IDLE POWER

37% RPM

BOTH ENGINES

FREE FLOW

METEOROLOGY:

TEMP = 25 C

BAR PRESS = .760 M HG

REL HUMID = 84 %

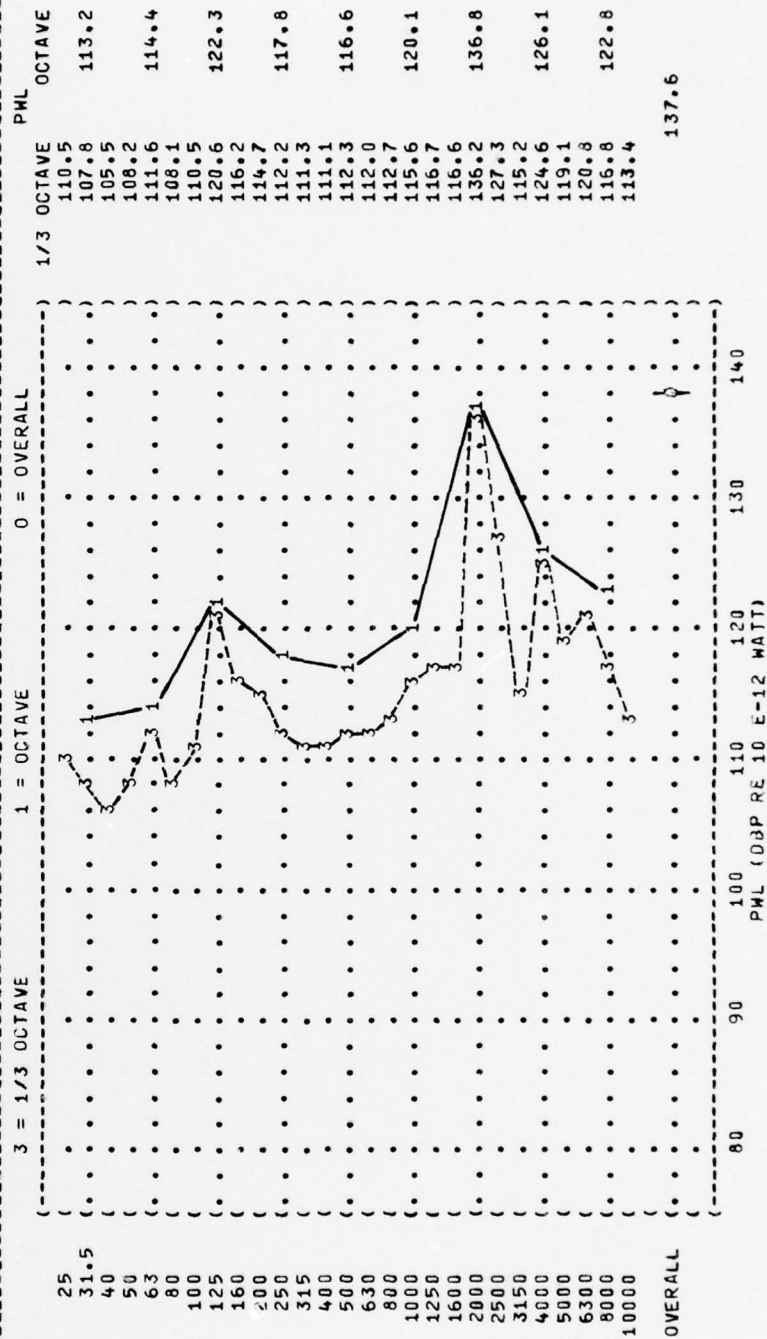




FIGURE 4 ACOUSTIC POWER LEVEL (PWL)

4

IDENTIFICATION: OMEGA 1.4  
TEST 75-002-046  
RUN 02

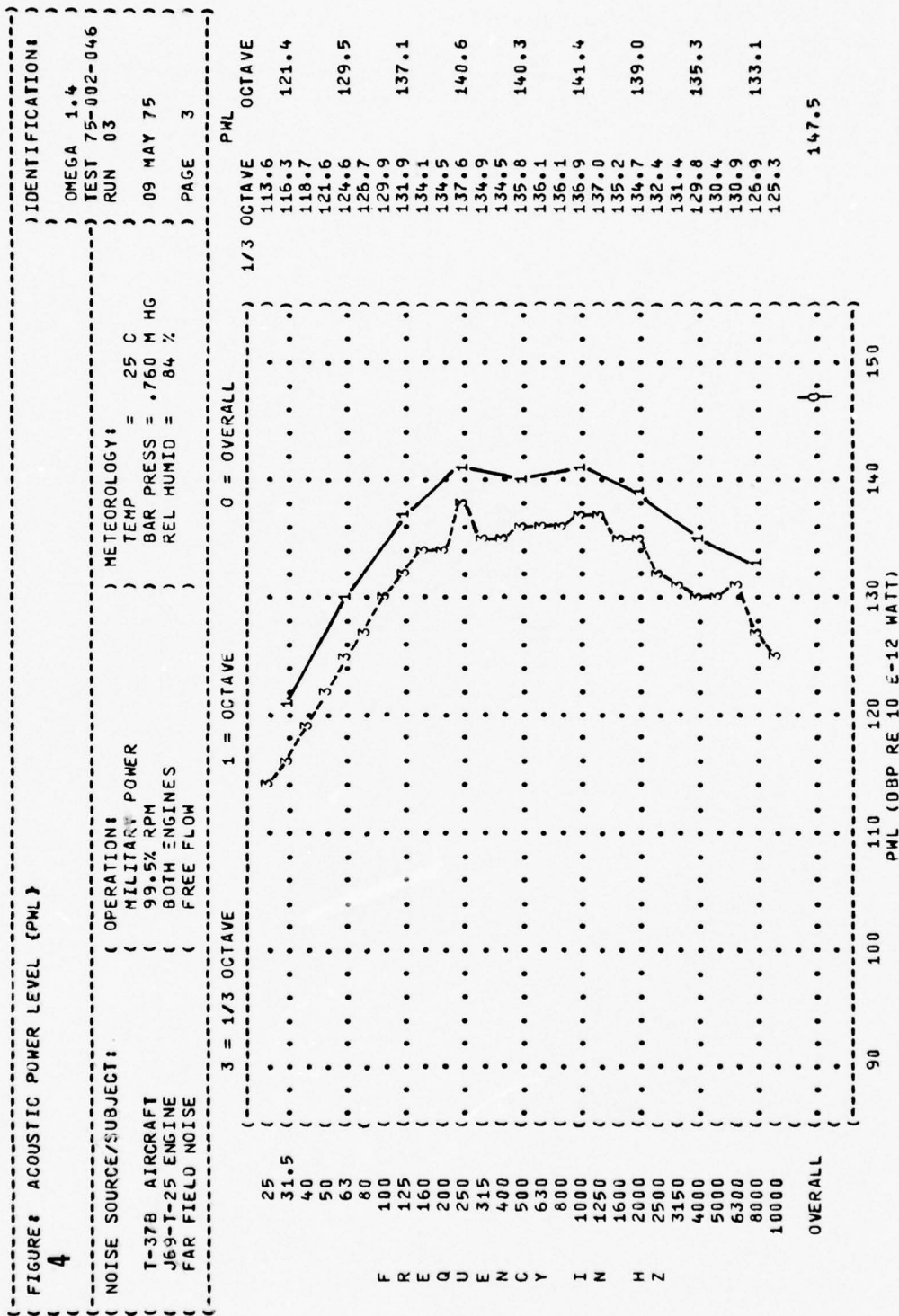
NOISE SOURCE/SUBJECT: T-37B AIRCRAFT  
J69-I-25 ENGINE  
FAR FIELD NOISE

OPERATION: TRIM CHECK POWER  
92% RPM  
BOTH ENGINES  
FREE FLOW

METEOROLOGY: TEMP = 25 C  
BAR PRESS = .760 M HG  
REL HUMID = 84 %

PAGE 3













IDENTIFICATION:

**OMEGA 1.4**

## 1) METEOROLOGY:

## CROLOGY:

TEMP = 15 C

BAR PRESS = .760 M HG

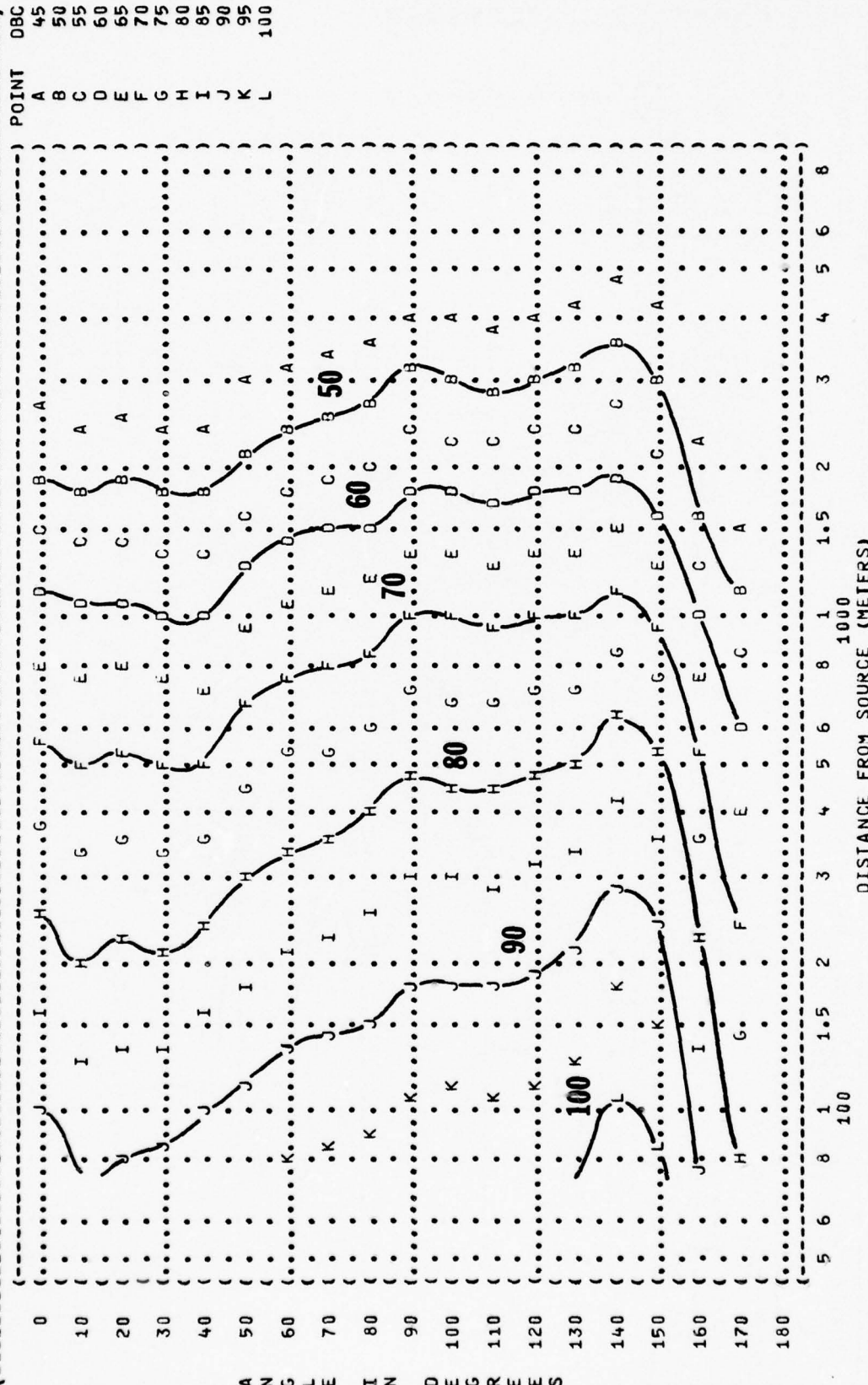
REL HUMID = 70 %

PAGE 14

POINT	A	B	C	D	E	F	G	H	I	J	K	L
DBC	45	50	55	60	65	70	75	80	85	90	95	100

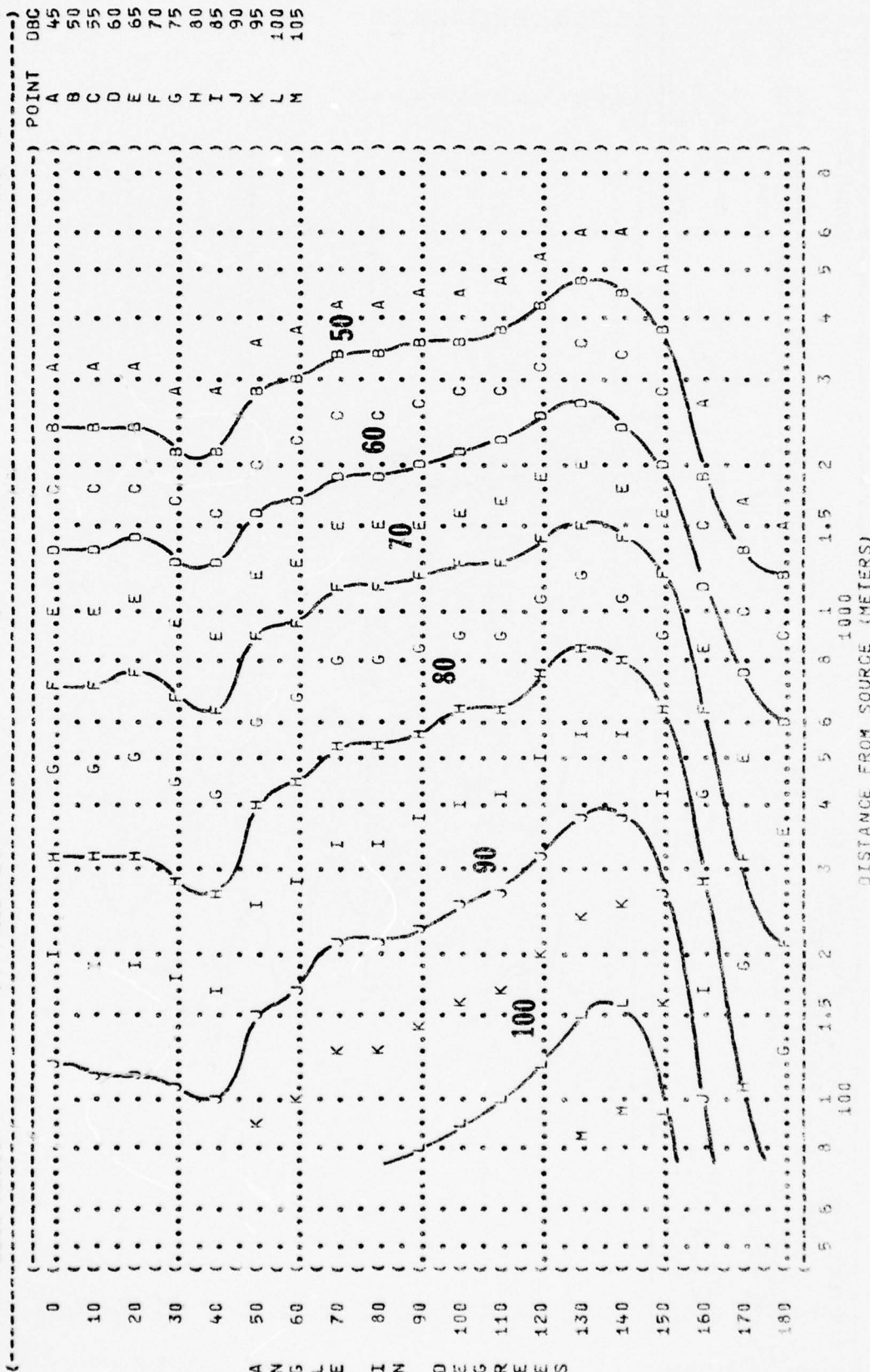


C-WEIGHTED OVERALL SOUND LEVEL {OASLC}  
EQUAL LEVEL CONTOURS (DBC)





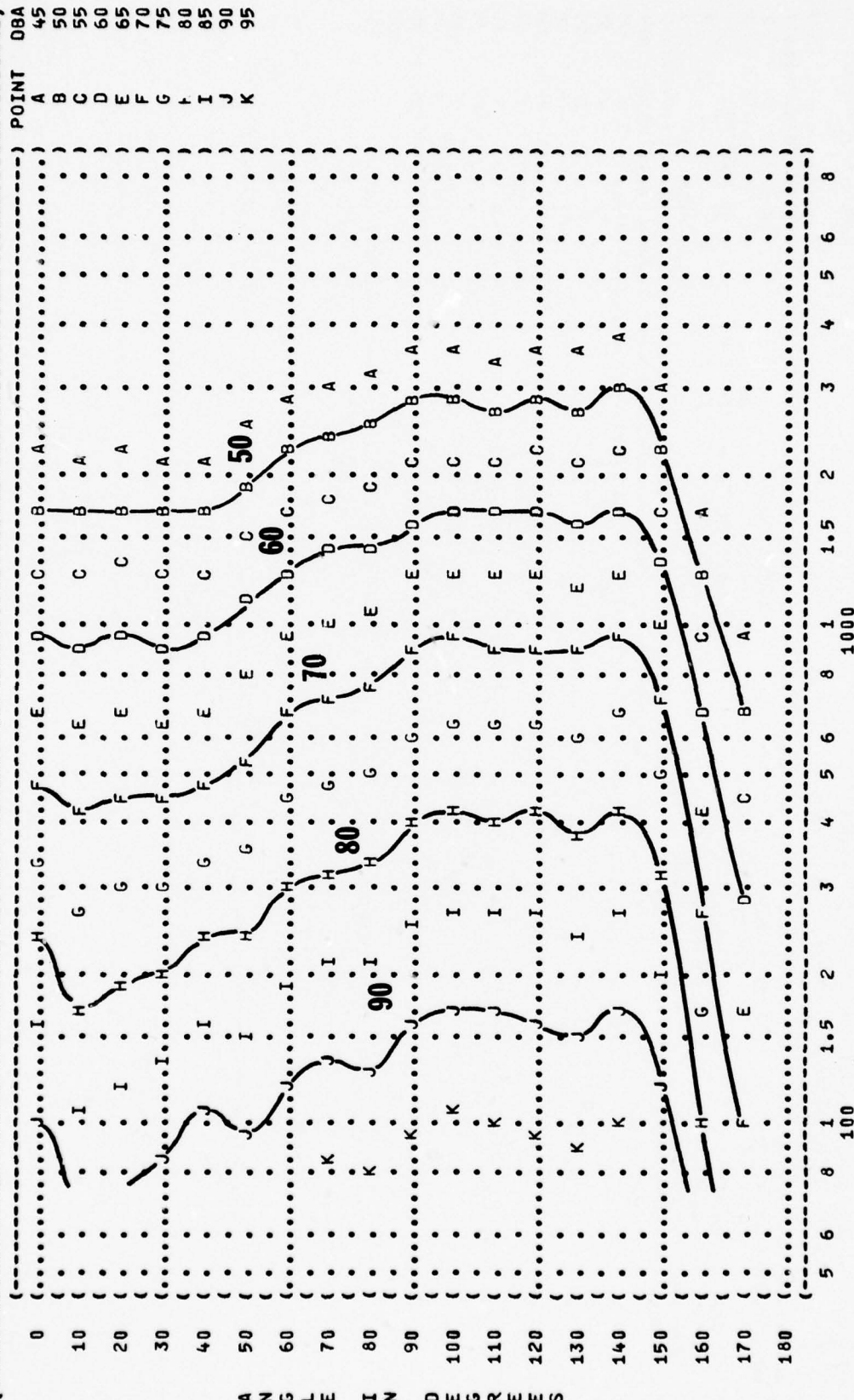
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(-----)
( FIGURE: C-WEIGHTED OVERALL SOUND LEVEL {OASLC} ) IDENTIFICATION: )
(      6      EQUAL LEVEL CONTOURS (DBC) ) )
( ) ) OMEGA 1.4 )
( ) ) TEST 75-002-046 )
( ) ) RUN 03 )
( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )
( ) OPERATION: ) TEMP = 15 C )
( T-378 AIRCRAFT ) MILITARY POWER ) BAR PRESS = .760 M HG )
( J69-I-25 ENGINE ) 99.5% RPM ) REL HUMID = 70 % )
( FAR FIELD NOISE ) BOTH ENGINES ) )
( ) FREE FLOW ) PAGE 14 )
(-----)
```







( FIGURE: A-WEIGHTED OVERALL SOUND LEVEL (OASLA)  
 ( 7 EQUAL LEVEL CONTOURS (DBA)  
 ( ) IDENTIFICATION:  
 ( ) OMEGA 1.4  
 ( ) TEST 75-002-046  
 ( ) RUN 02  
 ( ) METEOROLOGY:  
 ( ) TEMP = 15 C  
 ( ) BAR PRESS = .760 M HG  
 ( ) REL HUMID = 70 %  
 ( ) 09 MAY 75  
 ( ) PAGE 15  
 ( )  
 ( NOISE SOURCE/SUBJECT:  
 ( ) OPERATION:  
 ( ) TRIM CHECK POWER  
 ( ) 92% RPM  
 ( ) BOTH ENGINES  
 ( ) FREE FLOW  
 ( ) T-37B AIRCRAFT  
 ( ) J69-T-25 ENGINE  
 ( ) FAR FIELD NOISE



IDENTIFICATION: 7  
 OMEGA 1.4  
 TEST 75-002-046  
 RUN 03  
 09 MAY 75  
 PAGE 15  
 METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = 760 MM HG  
 REL HUMID = 70 %  
 OPERATION:  
 MILITARY POWER  
 99.5% RPM  
 BOTH ENGINES  
 FREE FLOW

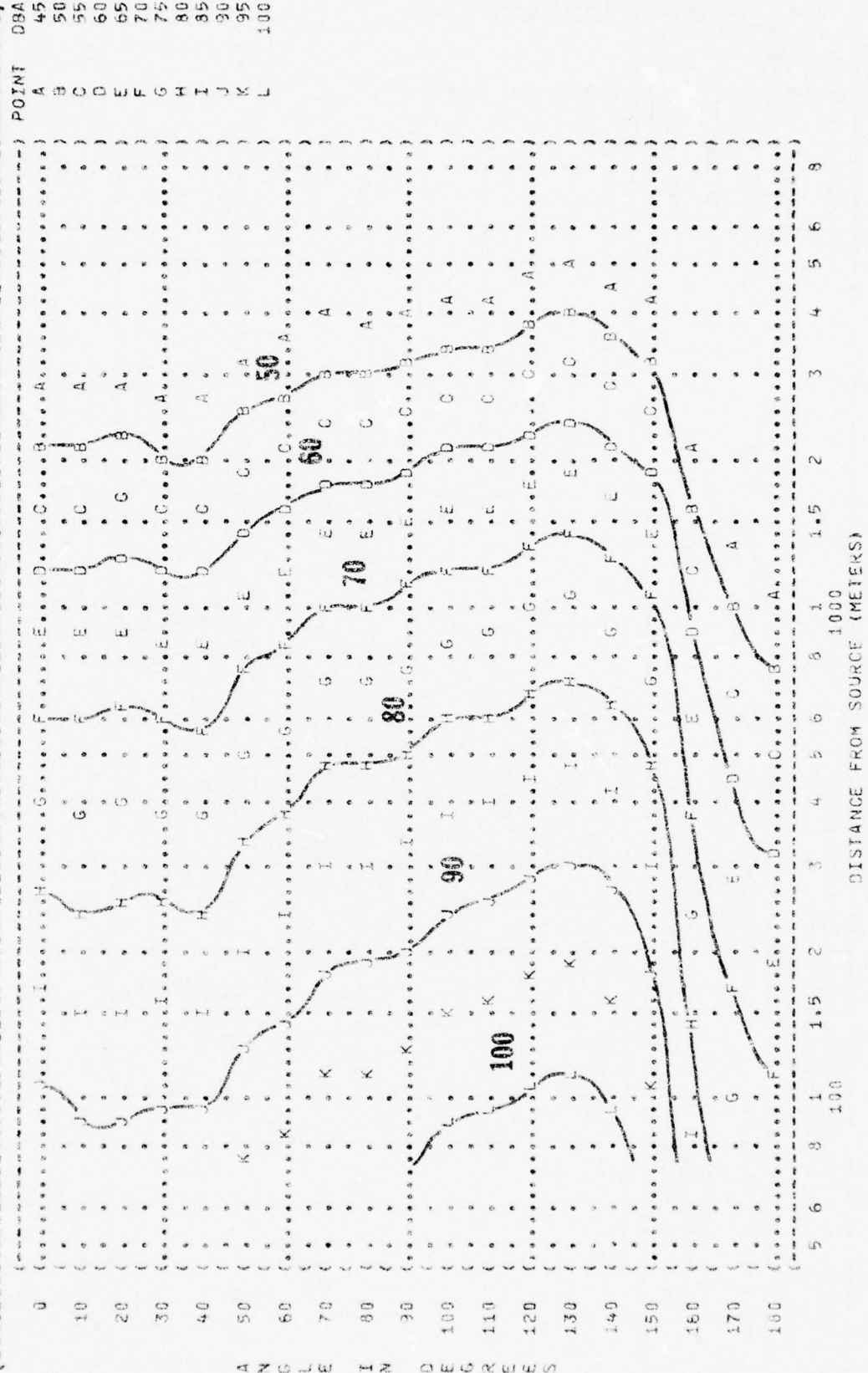


FIGURE: PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT)  
 8  
 IDENTIFICATION:  
 OMEGA 1.4  
 TEST 75-002-046  
 RUN 01  
 NOISE SOURCE/SUBJECT:  
 OPERATION:  
 IDLE POWER  
 37% RPM  
 BOTH ENGINES  
 FREE FLOW  
 METEOROLOGY:  
 TEMP = 15 C  
 BAR PRESS = .760 M HG  
 REL HUMID = 70 %  
 I-37B AIRCRAFT  
 J69-T-25 ENGINE  
 FAR FIELD NOISE  
 09 MAY 75  
 PAGE 16

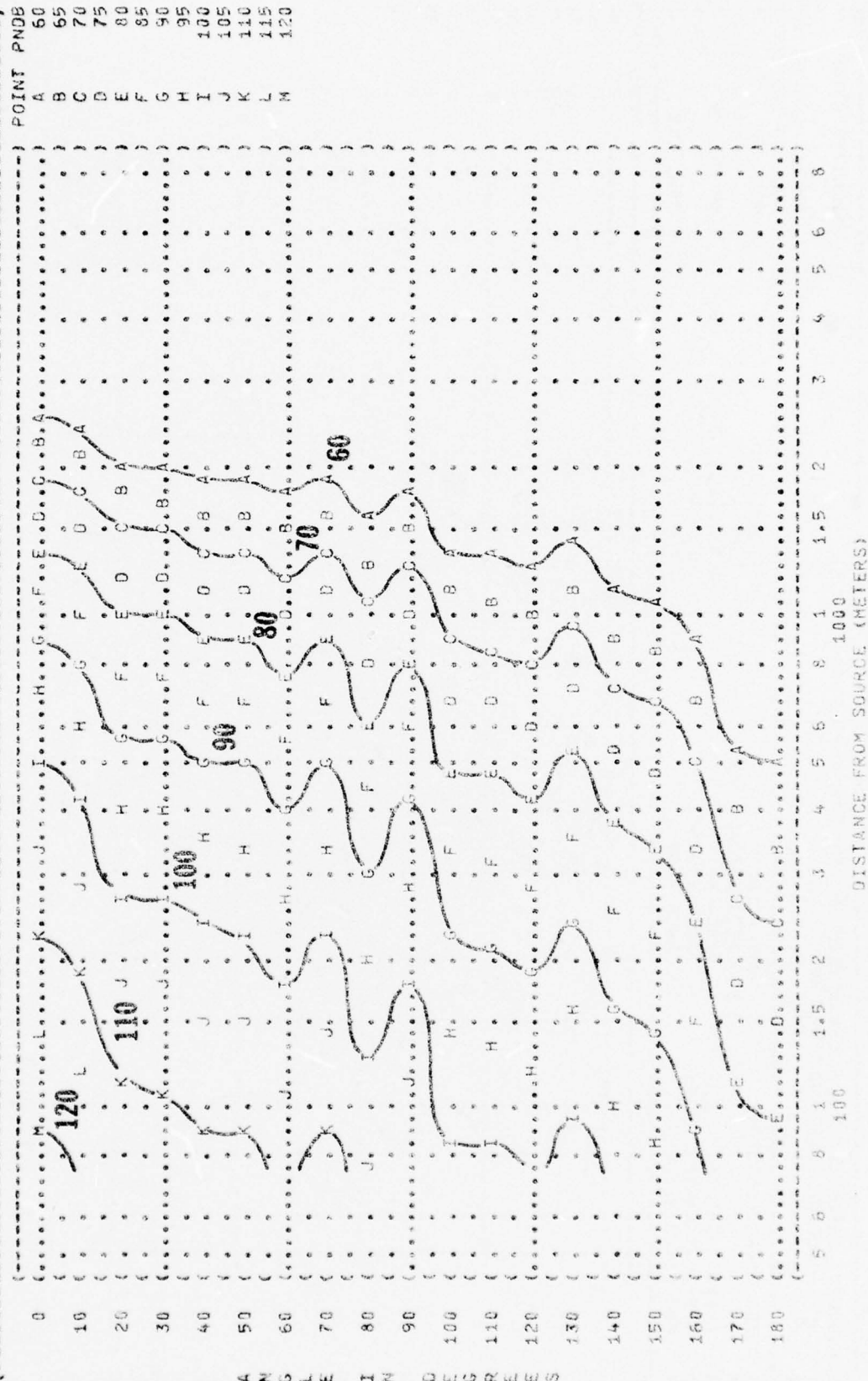
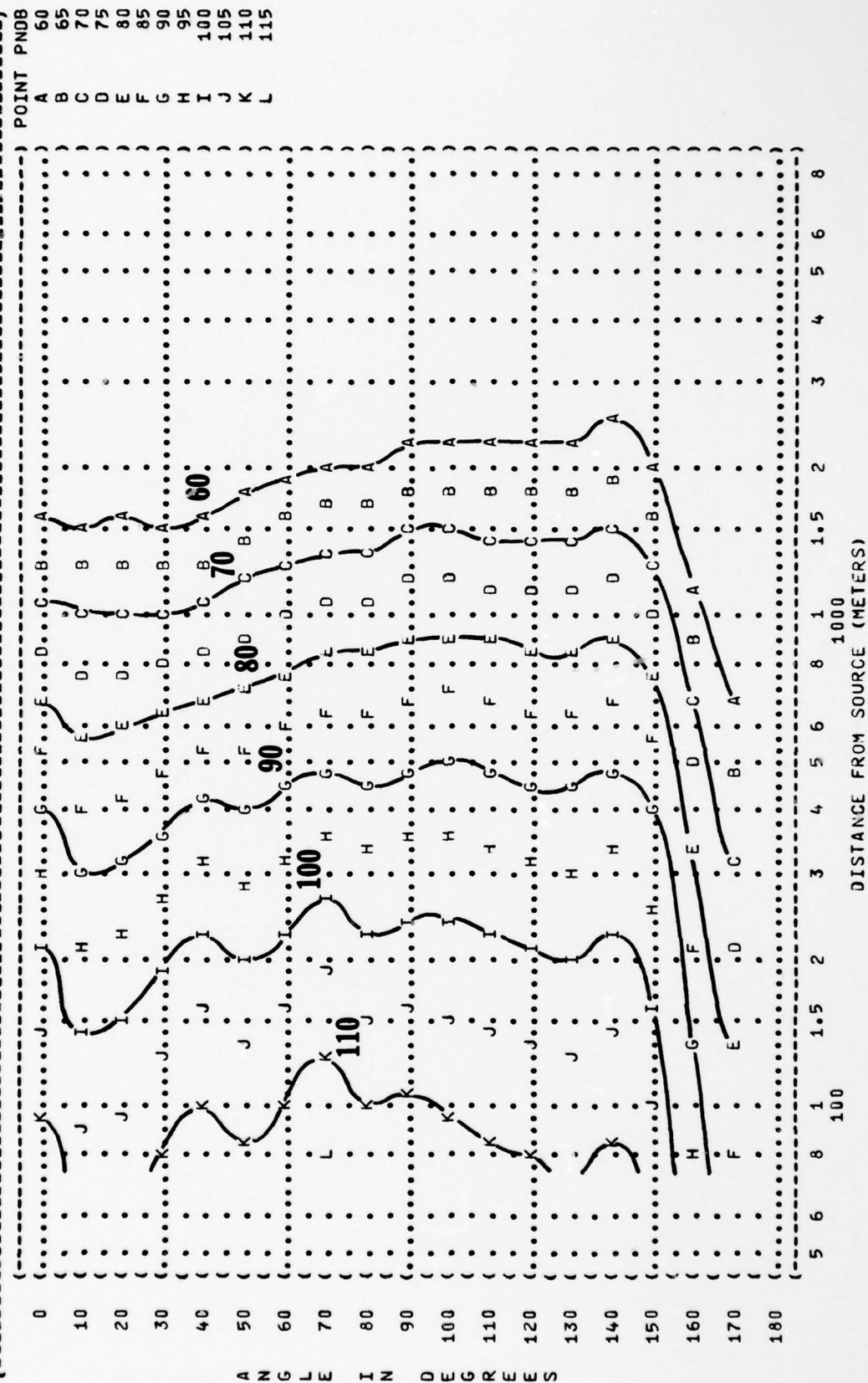


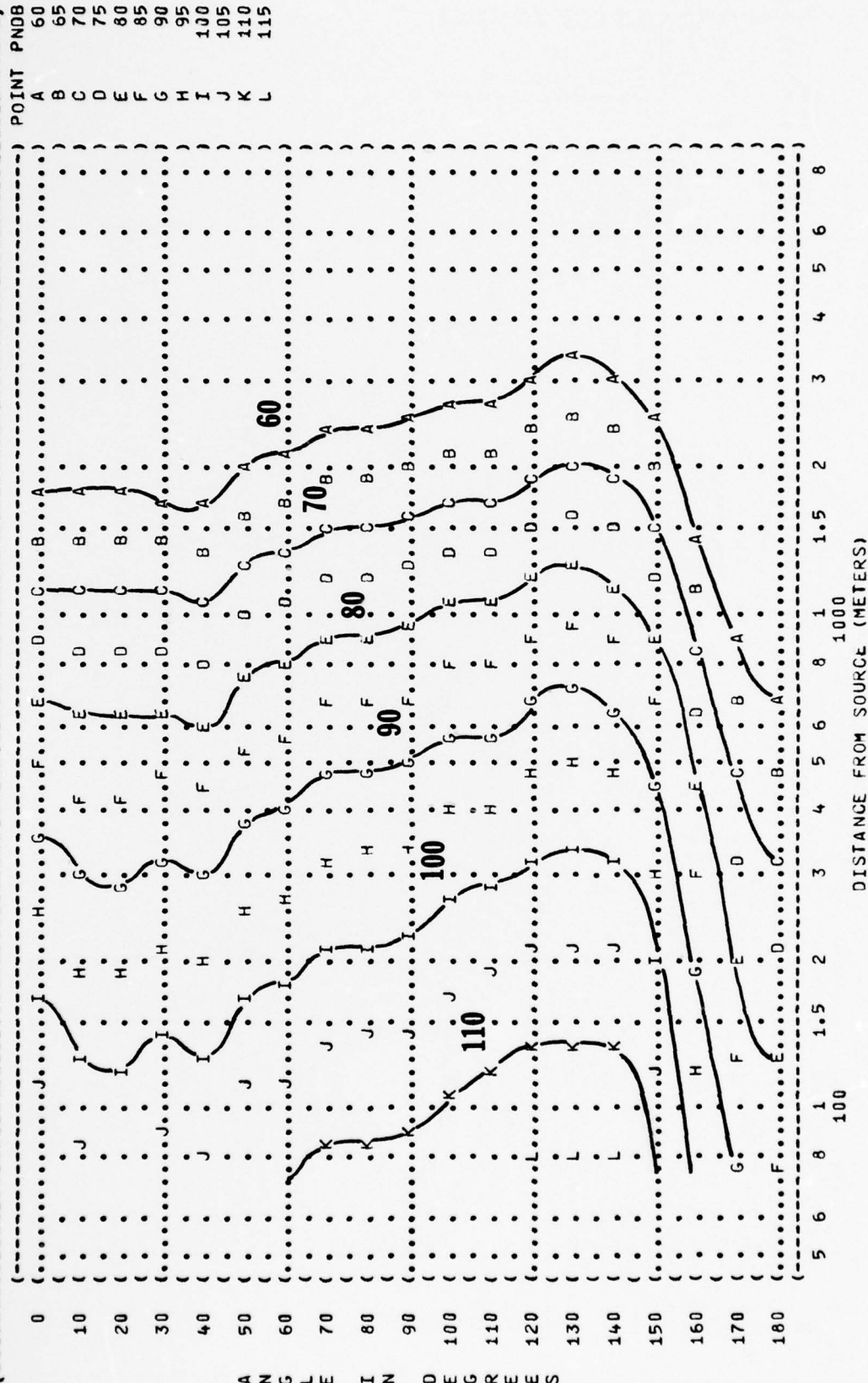


FIGURE:	PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION {PNLT}	IDENTIFICATION:
EQUAL LEVEL CONTOURS {PNDB}		
8		OMEGA 1.4
		TEST 75-002-046
		RUN 02
NOISE SOURCE/SUBJECT:	OPERATION:	METEOROLOGY:
T-378 AIRCRAFT	TRIM CHECK POWER	TEMP = 15 C
J69-T-25 ENGINE	92% RPM	BAR PRESS = .760 M HG
FAR FIELD NOISE	BOTH ENGINES	REL HUMID = 70 %
	FREE FLOW	
		PAGE 16



ANGLE IN DEGREES

```
(-----)
( ( FIGURE# PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION {PNLT} ) IDENTIFICATION# )
( (      8          EQUAL LEVEL CONTOURS (PNOB) ) )
(-----)
( ( NOISE SOURCE/SUBJECT: ) OPERATION: ) METEOROLOGY: )
( ( T-37B AIRCRAFT ) MILITARY POWER ) TEMP = 15 C )
( ( J69-I-25 ENGINE ) 99.5% RPM ) BAR PRESS = .760 M HG )
( ( FAR FIELD NOISE ) BOTH ENGINES ) REL HUMID = 70 % )
( ( ) FREE FLOW ) ) PAGE 16 )
(-----)
```

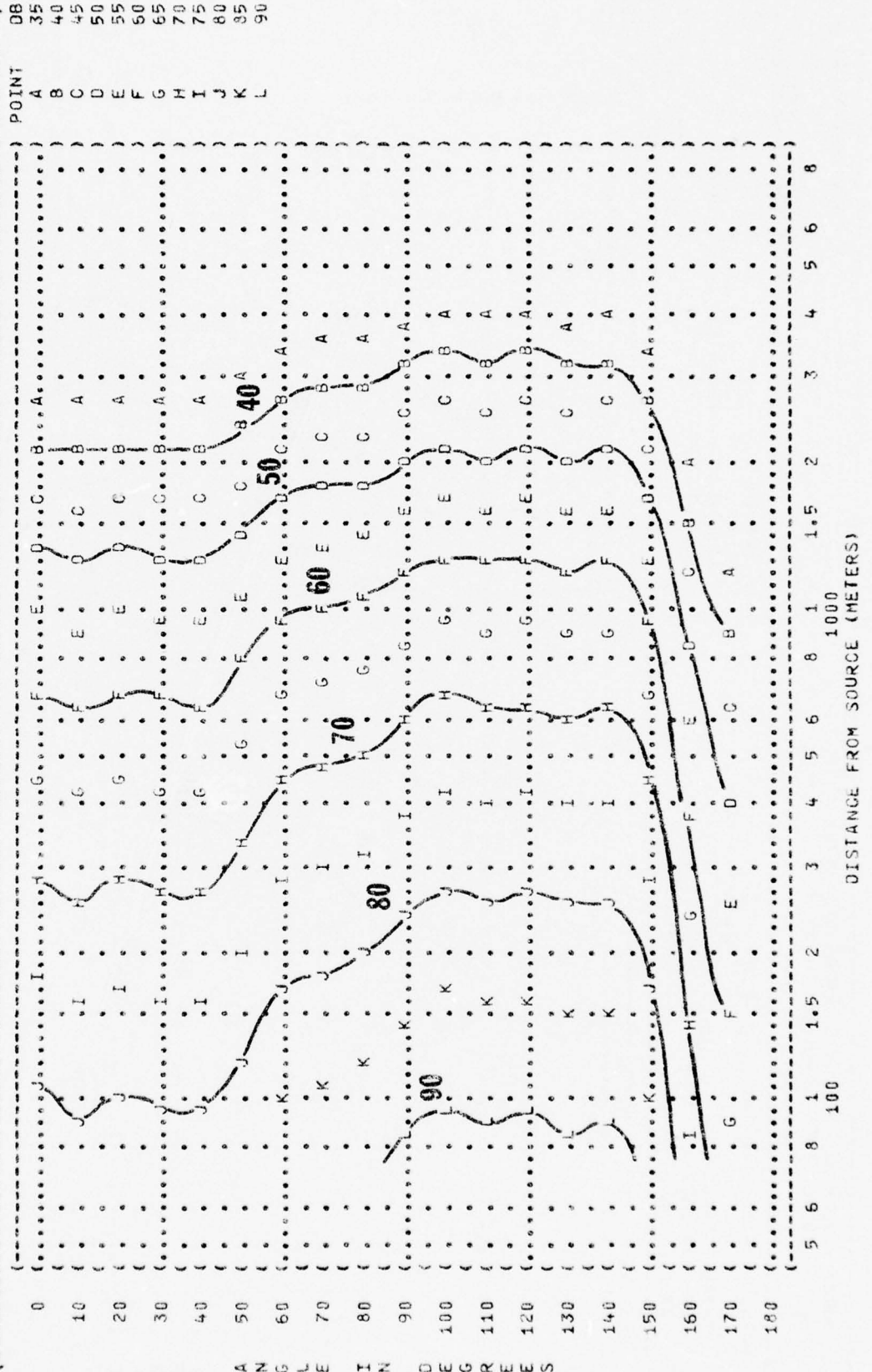




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(-----)
( ( FIGURE: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL) ) )
( ( 9 ) )
( ( EQUAL LEVEL CONTOURS (DB) ) )
(-----)
( ( NOISE SOURCE/SUBJECT: ) )
( ( OPERATION: ) )
( ( TRIM CHECK POWER ) )
( ( 92% RPM ) )
( ( BOTH ENGINES ) )
( ( FREE FLOW ) )
(-----)
( ( METEOROLOGY: ) )
( ( TEMP = 15 C ) )
( ( BAR PRESS = .760 M HG ) )
( ( REL HUMID = 70 % ) )
(-----)
( ( IDENTIFICATION: ) )
( ( OMEGA 1.4 ) )
( ( TEST 75-002-046 ) )
( ( RUN 02 ) )
( ( 09 MAY 75 ) )
( ( PAGE 17 ) )
(-----)

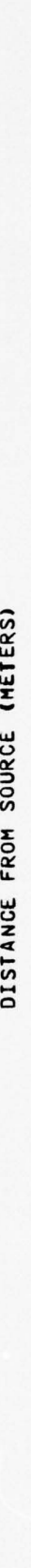
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10 GUAR

NOISE SOURCE/SUBJECT:

T-37B AIRCRAFT  
J69-T-25 ENGINE  
FAR FIELD NOISE

( ( OPERATION!  
( ( IDLE POW  
( ( 37% RPM  
( ( BOTH ENG  
( ( FREE FLO

) METEOROLOGY:  
 ) TEMP  
 ) BAR PRESS  
 ) REL HUMID

JULY 73)

### IDENTIFICATION:

OMEGA 1.4

TEST 75-002-046

RUN 01

09 MAY 75

PAGE 8

PERSONNEL MAY BE EXPOSED UP TO 960 MINUTES PER DAY

AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 75 METERS

FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)

UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:

MINIMUM QPL EAR MUFFS

AMERICAN OPTICAL 1700 EAR MUFFS

V-51R EAR PLUGS

COMFIT TRIPLE FLANGE EAR PLUGS

H-133 GROUND COMMUNICATION UNIT

AMERICAN INDIAN  
HISTORICAL SOCIETY

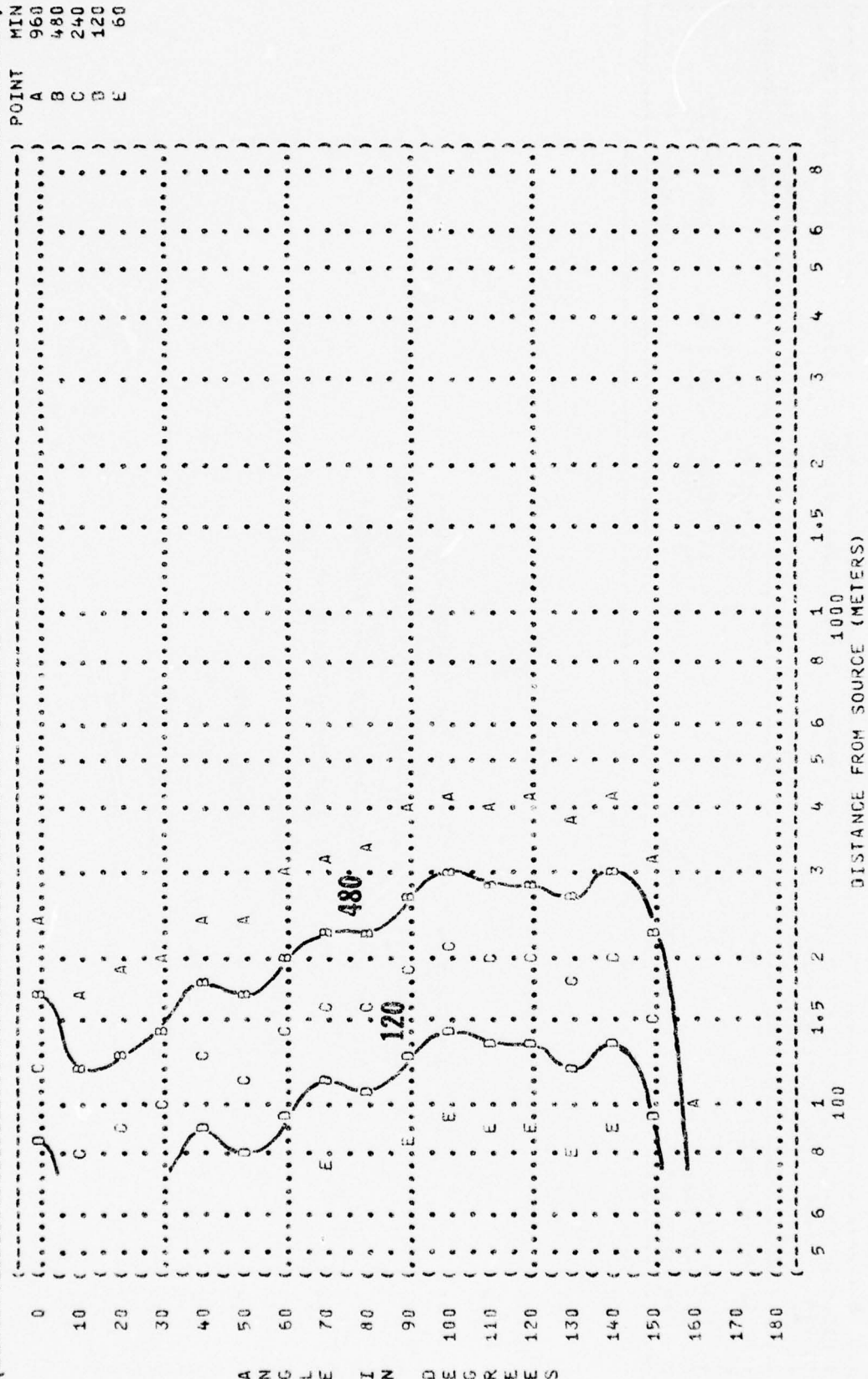
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100 1000

DISTANCE FROM SOURCE (METERS)

DISTANCE FROM SOURCE (METERS)

```
(-----)
( FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) ) IDENTIFICATION:
( 10 EQUAL TIME CONTOURS (MINUTES) ) )
( NO PROTECTION ) )
( NOISE SOURCE/SUBJECT: ) METEOROLOGY:
( ) OPERATION: ) TEMP = 15 C )
( TRIM CHECK POWER ) )
( 92% RPM ) BAR PRESS = .760 M HG )
( BOTH ENGINES ) REL HUMID = 70 % )
( FREE FLOW ) ) PAGE 7
(-----)
```



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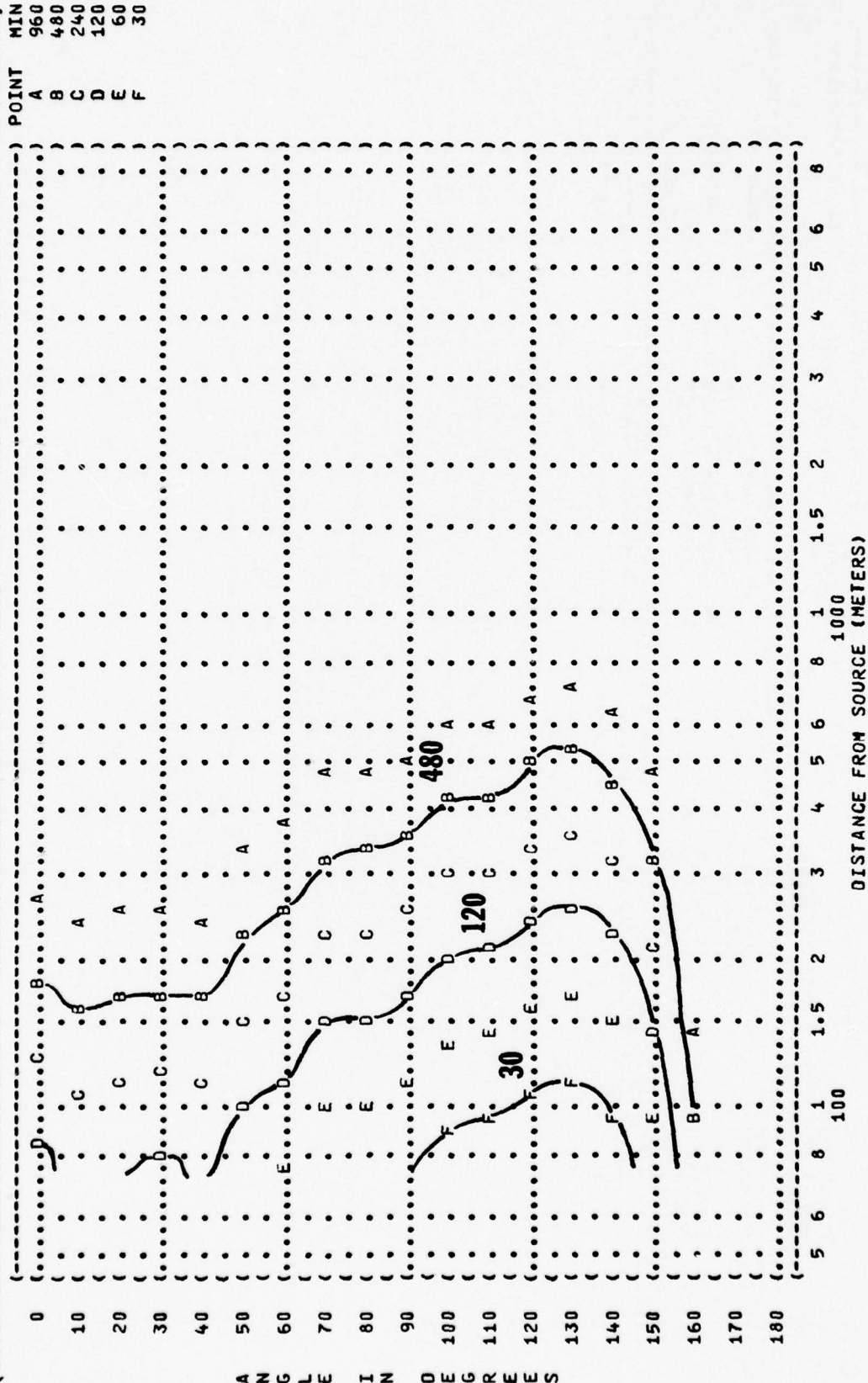


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(-----)
( FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) ) IDENTIFICATION# )
(    10      EQUAL TIME CONTOURS (MINUTES) ) )
( ) )
( ) OMEGA 1.4 )
( ) TEST 75-002-046 )
( ) RUN 02 )
(-----)
( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )
( ( TRIM CHECK POWER ) TEMP = 15 C )
( T-37B AIRCRAFT ) BAR PRESS = .760 M HG )
( J69-T-25 ENGINE ) 92% RPM )
( FAR FIELD NOISE ) BOTH ENGINES ) REL HUMID = 70 % )
( FREE FLOW ) ) PAGE 8 )
```

PERSONNEL MAY BE EXPOSED UP TO 960 MINUTES PER DAY  
AT ALL DISTANCES FROM SOURCE EQUAL TO OR GREATER THAN 75 METERS  
FOR ALL ANGLES EVALUATED (INDICATED BY < AT LEFT)  
UNDER THE FOLLOWING EAR PROTECTION CONDITIONS:

MINIMUM QPL EAR MUFFS  
AMERICAN OPTICAL 1700 EAR MUFFS  
V-51R EAR PLUGS  
COMFIT TRIPLE FLANGE EAR PLUGS  
H-133 GROUND COMMUNICATION UNIT

```
(-----)
( FIGURE# MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) ) IDENTIFICATION# )
(    10      EQUAL TIME CONTOURS (MINUTES) ) )
(          NO PROTECTION ) )
(-----)
( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )
(   ) OPERATION: ) TEMP = 15 C )
(   ) MILITARY POWER ) BAR PRESS = .760 M HG )
(   ) 99.5% RPM ) REL HUMID = 70 % )
(   ) BOTH ENGINES ) )
(   ) FREE FLOW ) PAGE 7 )
(-----)
```



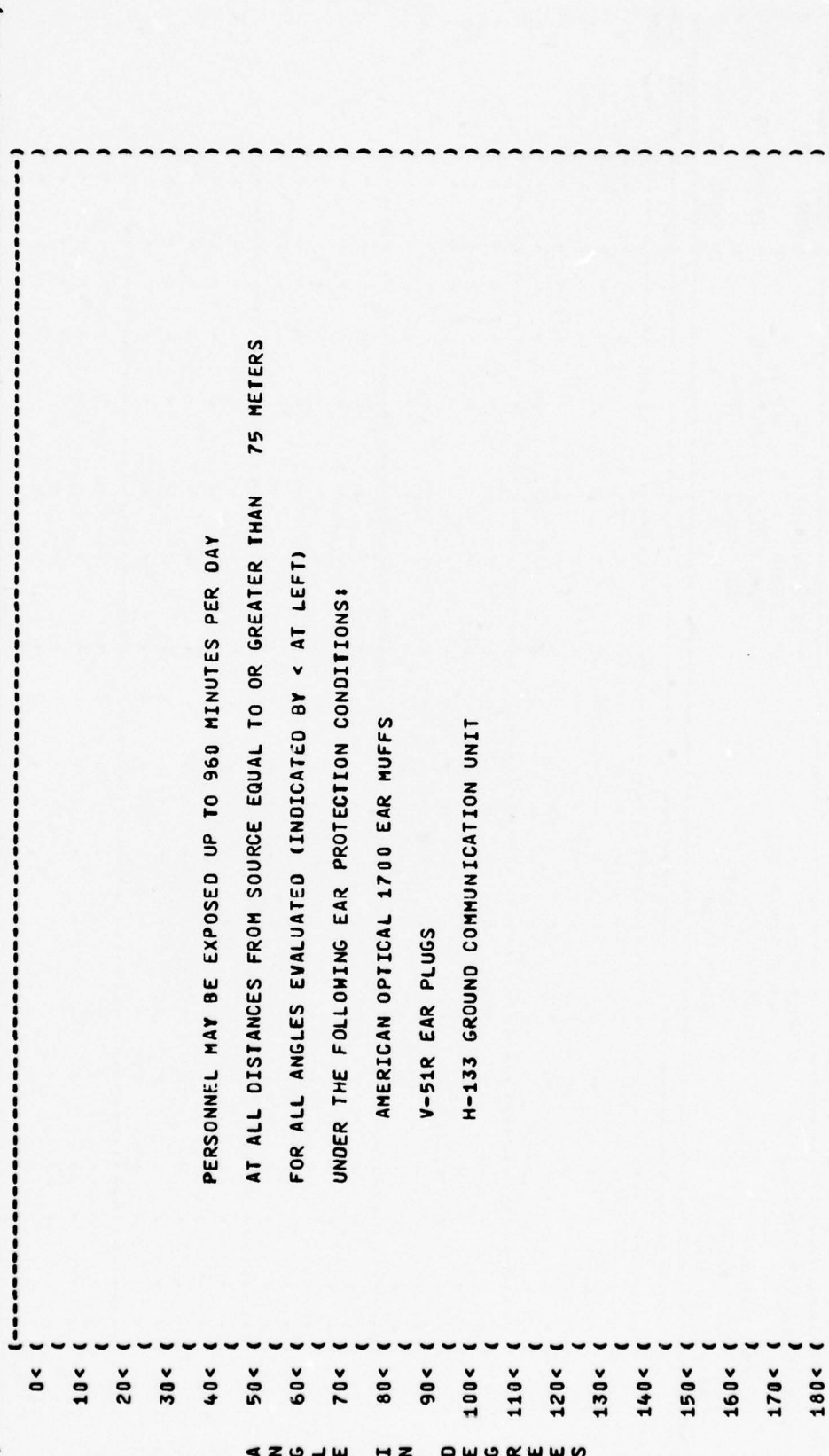
9

ANGLE IN DEGREES

DISTANCE FROM SOURCE (METERS)



FIGURE: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73) IDENTIFICATION:  
 10  
 NOISE SOURCE/SUBJECT: OPERATION: MILITARY POWER METEOROLOGY: TEMP = 15 C  
 T-37B AIRCRAFT 99.5% RPM BAR PRESS = .760 M HG  
 J69-T-25 ENGINE BOTH ENGINES REL HUMID = 70 %  
 FAR FIELD NOISE FREE FLOW



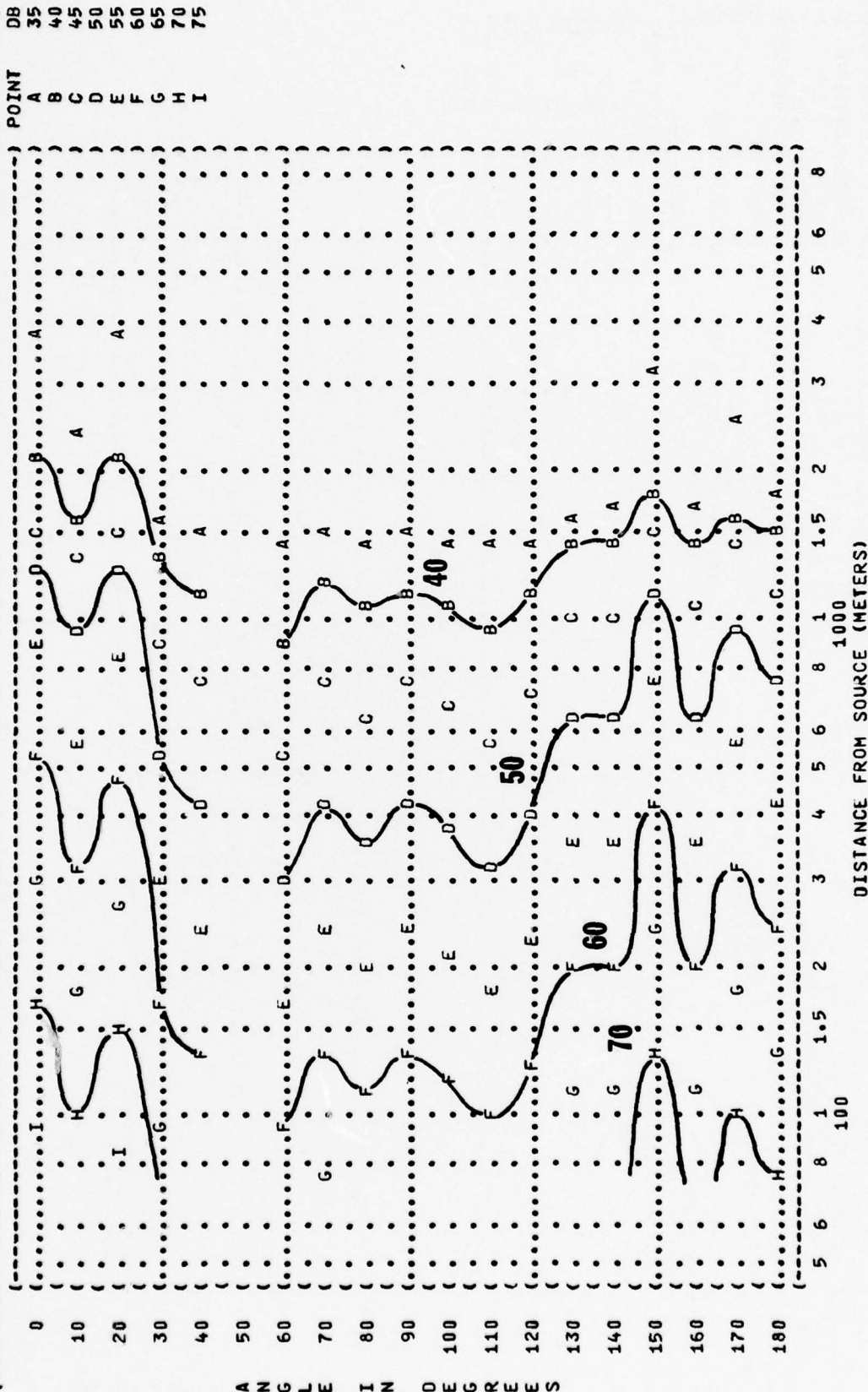
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 DISTANCE FROM SOURCE (METERS)

FIGURE: SOUND PRESSURE LEVEL (SPL)  
 11 EQUAL LEVEL CONTOURS (DB)  
 31.5 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT: ( ) OPERATION: ( ) METEOROLOGY: ( )  
 ( ) IDLE POWER ( ) TEMP = 15 C  
 ( ) 37% RPM ( ) BAR PRESS = .760 M HG  
 ( ) BOTH ENGINES ( ) REL HUMID = 70 %  
 ( ) FREE FLOW ( )

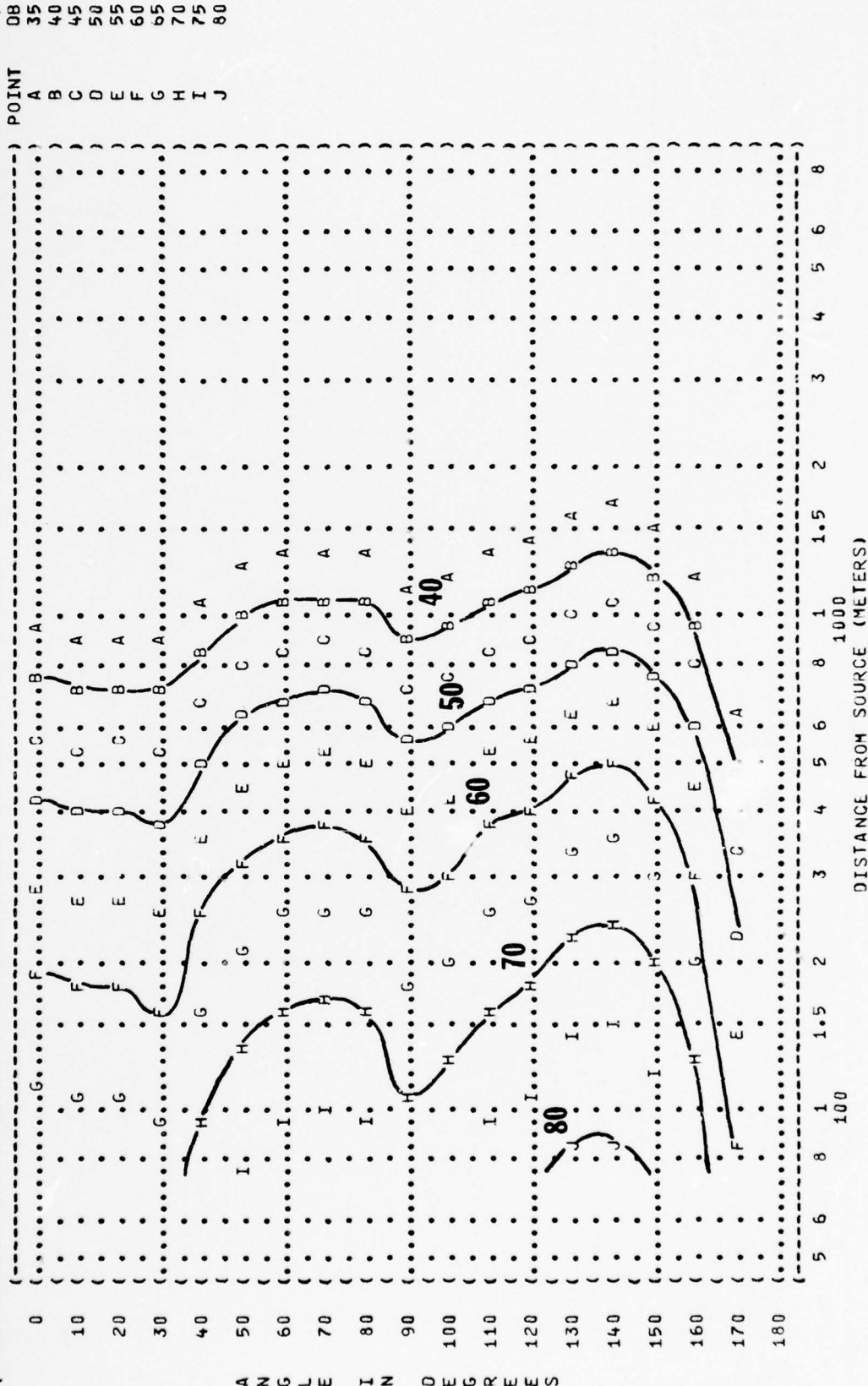
T-378 AIRCRAFT  
 J69-T-25 ENGINE  
 FAR FIELD NOISE

IDENTIFICATION:  
 OMEGA 1.4  
 TEST 75-002-046  
 RUN 01  
 09 MAY 75  
 PAGE 18



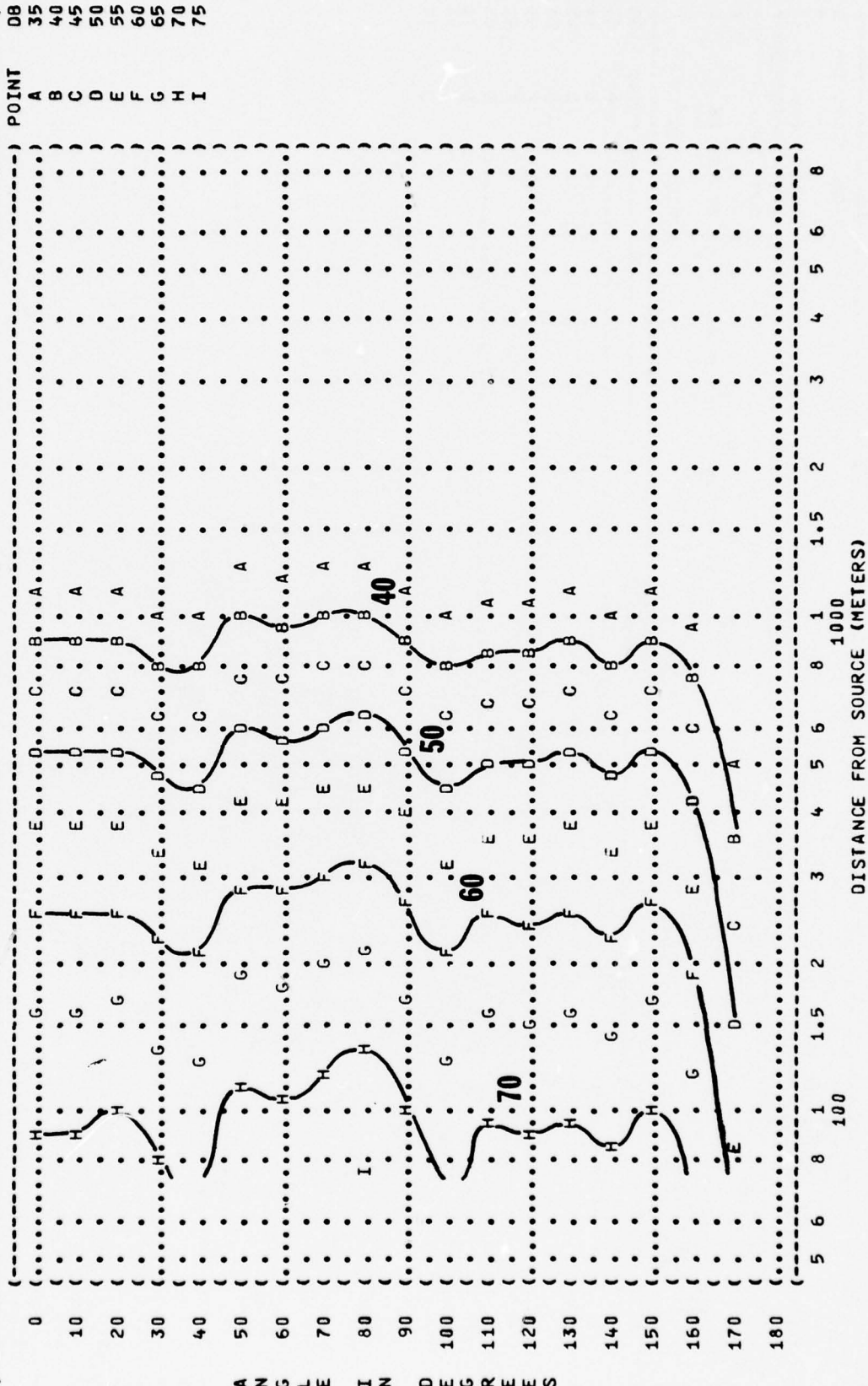


( FIGURE: SOUND PRESSURE LEVEL (SPL) )  
 ( 11 EQUAL LEVEL CONTOURS (DB) )  
 ( 125 HZ OCTAVE BAND )  
 ( NOISE SOURCE/SUBJECT: )  
 ( T-37B AIRCRAFT )  
 ( J65-T-25 ENGINE )  
 ( FAR FIELD NOISE )  
 ( OPERATION: )  
 ( IDLE POWER )  
 ( 372 RPM )  
 ( BOTH ENGINES )  
 ( FREE FLOW )  
 ( METEOROLOGY: )  
 ( TEMP = 15 C )  
 ( BAR PRESS = .760 M HG )  
 ( REL HUMID = 70 % )  
 ( IDENTIFICATION: )  
 ( OMEGA 1.4 )  
 ( TEST 75-002-046 )  
 ( RUN 01 )  
 ( 09 MAY 75 )  
 ( PAGE 20 )





( FIGURE: SOUND PRESSURE LEVEL (SPL) )  
 ( 11 EQUAL LEVEL CONTOURS (DB) )  
 ( 250 HZ OCTAVE BAND )  
 ( NOISE SOURCE/SUBJECT: )  
 ( OPERATION: )  
 ( IDLE POWER )  
 ( 37% RPM )  
 ( BOTH ENGINES )  
 ( FREE FLOW )  
 ( T-37B AIRCRAFT )  
 ( J69-I-25 ENGINE )  
 ( FAR FIELD NOISE )  
 ( METEOROLOGY: )  
 ( TEMP = 15 C )  
 ( BAR PRESS = .760 M HG )  
 ( REL HUMID = 70 % )  
 ( IDENTIFICATION: )  
 ( OMEGA 1.4 )  
 ( TEST 75-002-046 )  
 ( RUN 01 )  
 ( 09 MAY 75 )  
 ( PAGE 21 )



( FIGURE: SOUND PRESSURE LEVEL (SPL) )  
 ( 11 EQUAL LEVEL CONTOURS (DB) )  
 ( 500 HZ OCTAVE BAND )  
 ( NOISE SOURCE/SUBJECT: )  
 ( T-378 AIRCRAFT )  
 ( J69-T-25 ENGINE )  
 ( FAR FIELD NOISE )  
 ( OPERATION: )  
 ( IDLE POWER )  
 ( 37% RPM )  
 ( BOTH ENGINES )  
 ( FREE FLOW )  
 ( METEOROLOGY: )  
 ( TEMP = 15 C )  
 ( BAR PRESS = .760 M HG )  
 ( REL HUMID = 70 % )  
 ( IDENTIFICATION: )  
 ( OMEGA 1.4 )  
 ( TEST 75-002-046 )  
 ( RUN 01 )  
 ( 09 MAY 75 )  
 ( PAGE 22 )

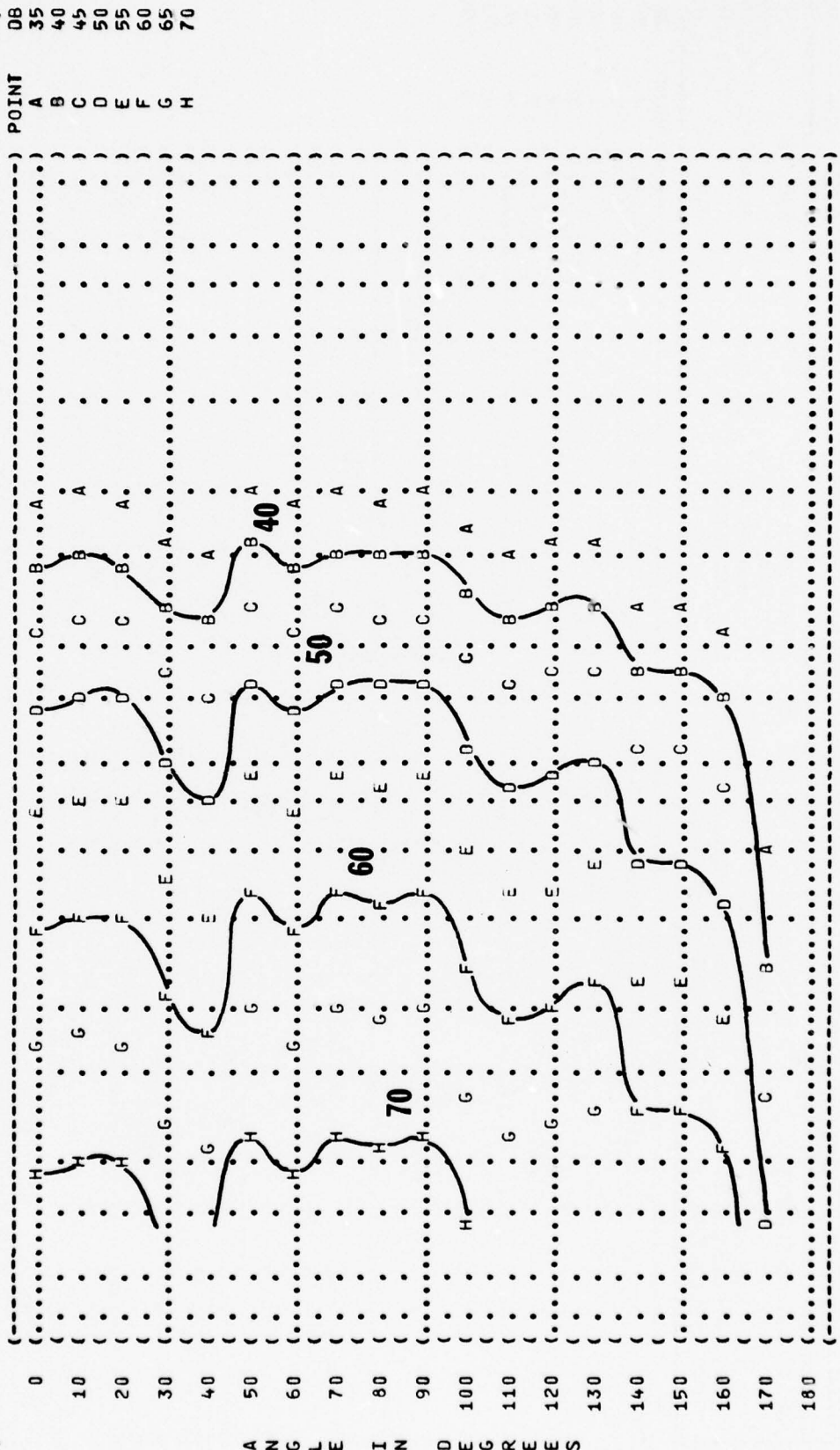


FIGURE: SOUND PRESSURE LEVEL (SPL)  
 11 EQUAL LEVEL CONTOURS (DB)  
 1000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT: ( ) IDENTIFICATION: ( )  
 ( ) ( )  
 ( ) OMEGA 1.4  
 ( ) TEST 75-002-046  
 ( ) RUN 01

OPERATION: ( ) METEOROLOGY: ( )  
 ( ) IDLE POWER ( ) TEMP = 15 C  
 ( ) 37% RPM ( ) BAR PRESS = .760 M HG  
 ( ) BOTH ENGINES ( ) REL HUMID = 70 %  
 ( ) FREE FLOW ( ) PAGE 23

T-378 AIRCRAFT  
 J69-T-25 ENGINE  
 FAR FIELD NOISE

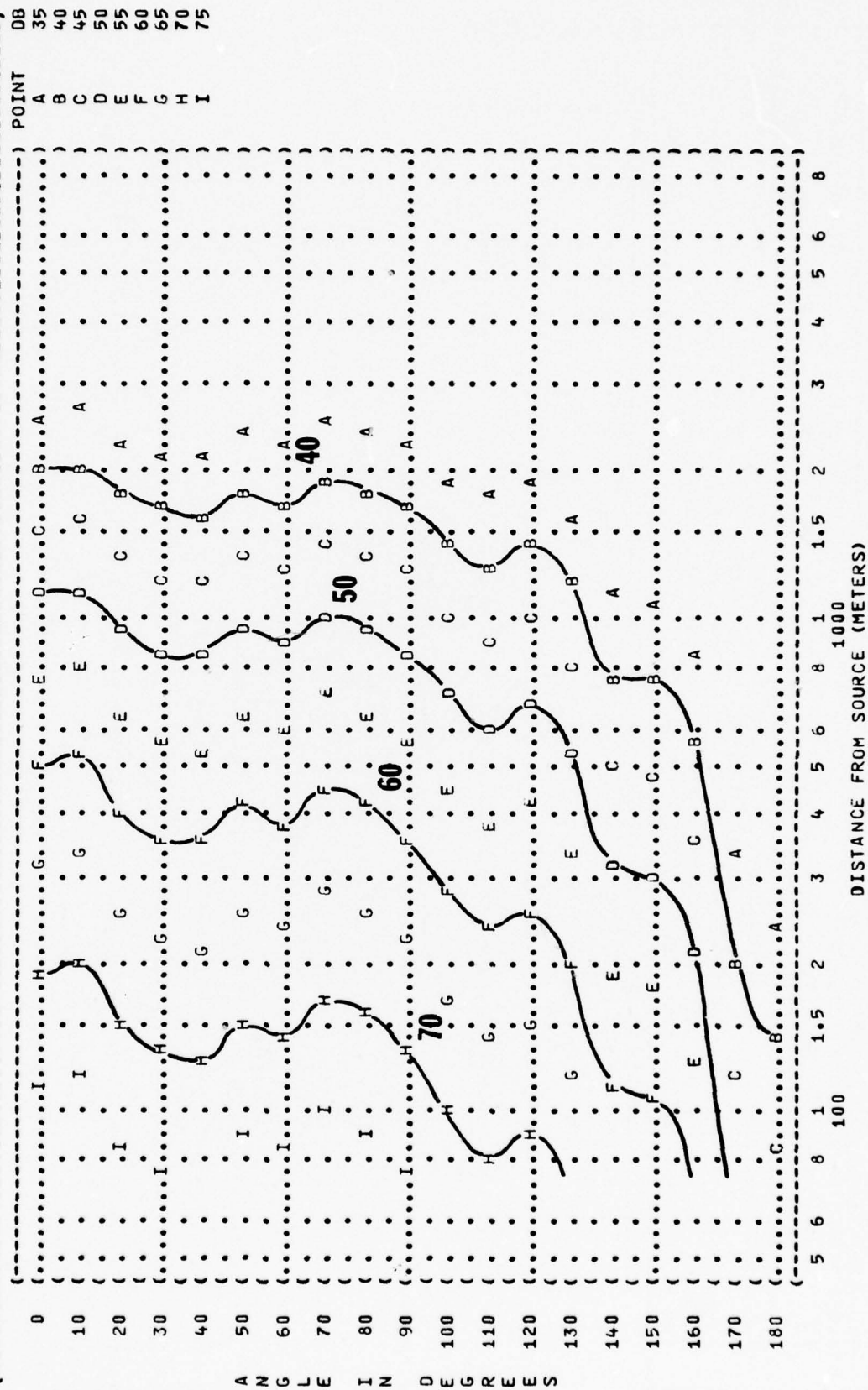


FIGURE 11

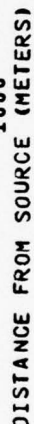




FIGURE: SOUND PRESSURE LEVEL (SPL)  
 11 EQUAL LEVEL CONTOURS (DB)  
 4000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT: ( ) OPERATION: ( ) METEOROLOGY: ( )  
 ( ) I-378 AIRCRAFT ( ) IDLE POWER ( ) TEMP = 15 C  
 ( ) J69-T-25 ENGINE ( ) 37% RPM ( ) BAR PRESS = .760 M HG  
 ( ) FAR FIELD NOISE ( ) BOTH ENGINES ( ) REL HUMID = 70 %  
 ( ) FREE FLOW ( )

IDENTIFICATION: ( )  
 ( ) OMEGA 1.4  
 ( ) TEST 75-002-046  
 ( ) RUN 01  
 ( ) 09 MAY 75  
 ( ) PAGE 25

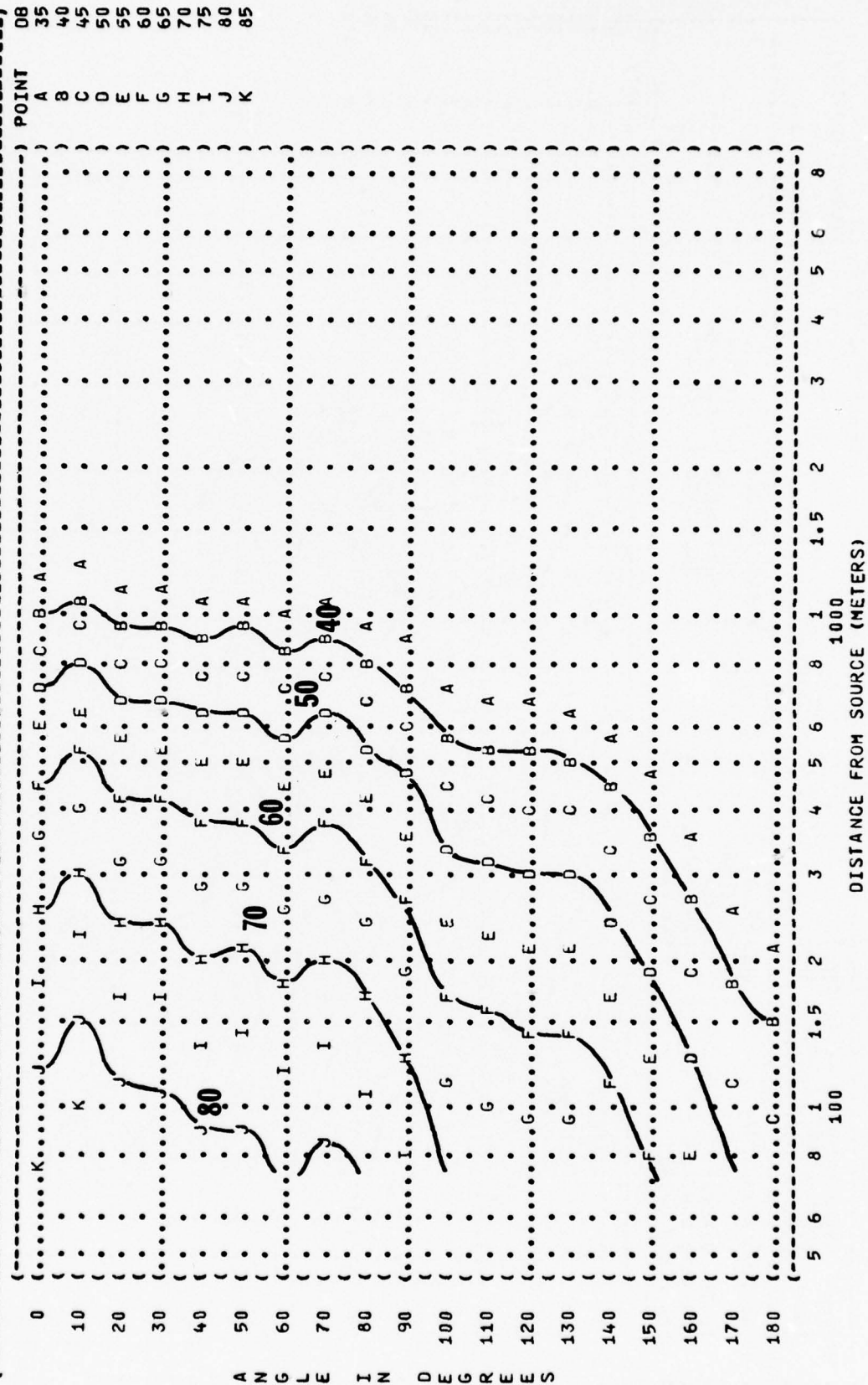




FIGURE: SOUND PRESSURE LEVEL {SPL}  
 11 EQUAL LEVEL CONTOURS (DB)  
 31.5 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT: OPERATION: METEOROLOGY:  
 ( ( TRIM CHECK POWER ) ) TEMP = 15 C  
 ( ( 92% RPM ) ) BAR PRESS = .760 M HG  
 ( ( BOTH ENGINES ) ) REL HUMID = 70 %  
 ( ( FREE FLOW ) )

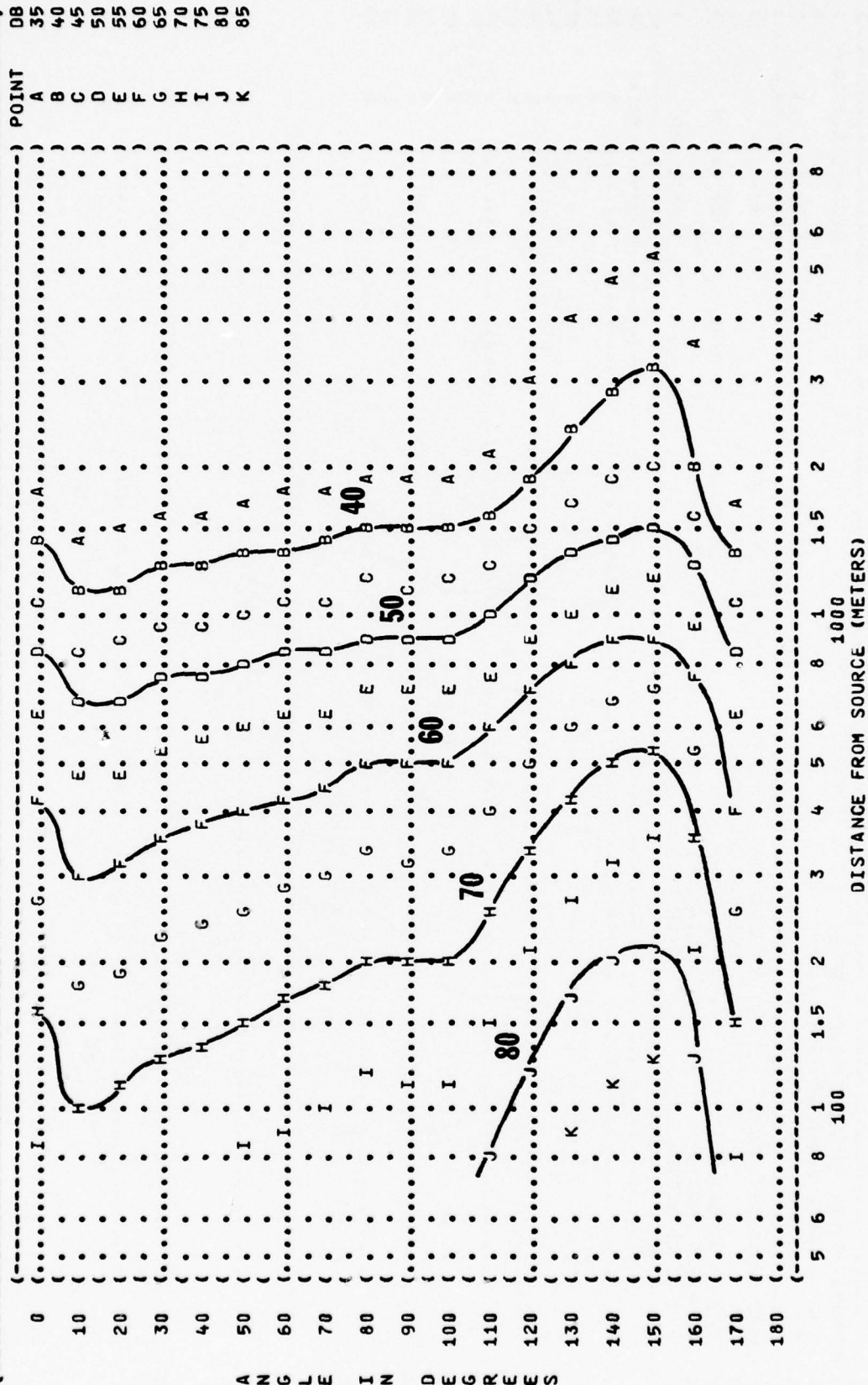
T-37B AIRCRAFT  
 J69-T-25 ENGINE  
 FAR FIELD NOISE

IDENTIFICATION:  
 OMEGA 1.4  
 TEST 75-002-046  
 RUN 02  
 09 MAY 75  
 PAGE 18





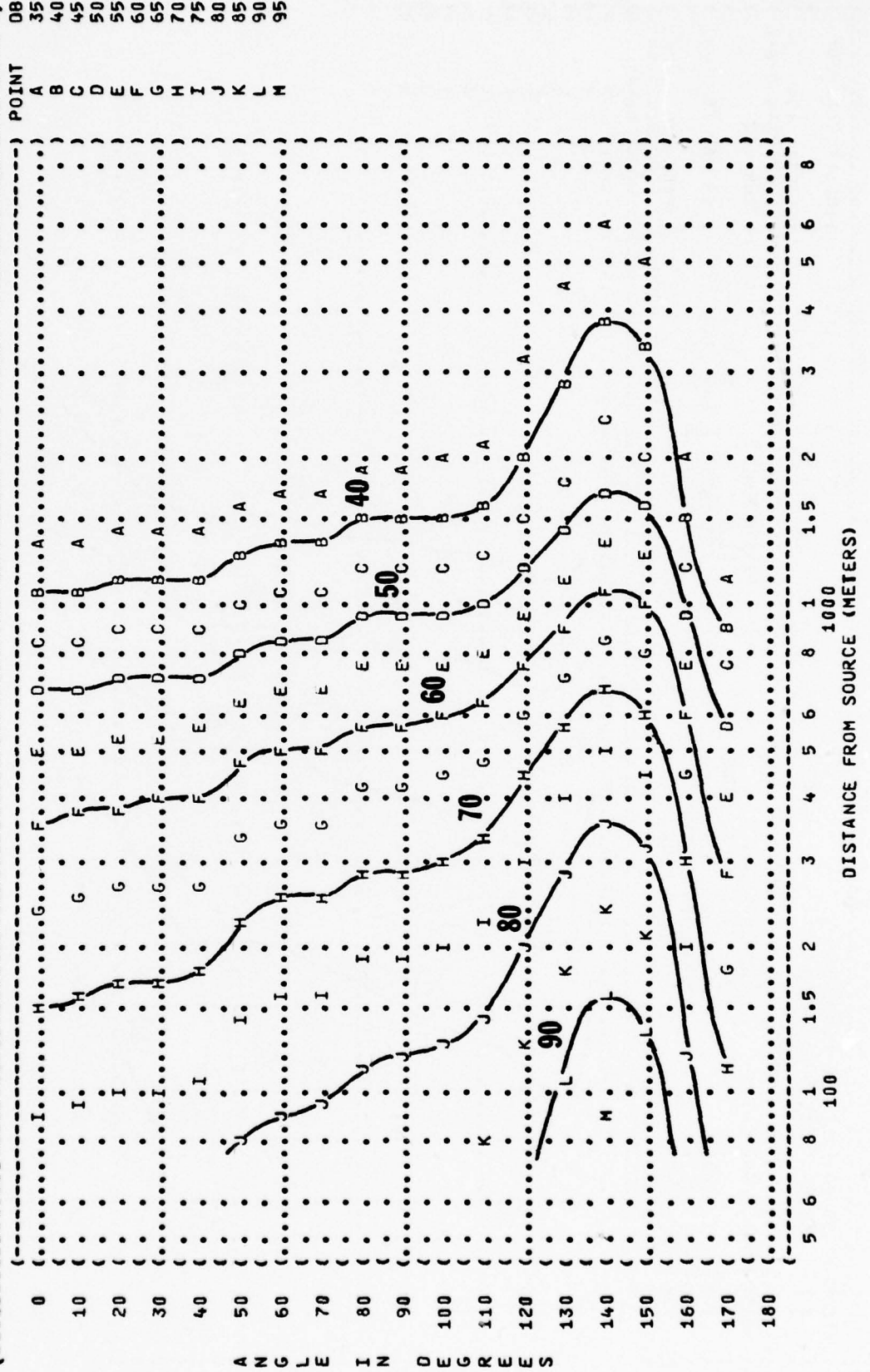
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(-----)
( FIGURE# SOUND PRESSURE LEVEL {SPL} ) IDENTIFICATION# )
(      11 EQUAL LEVEL CONTOURS (DB) )
(      63 HZ OCTAVE BAND )
(-----)
( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )
( ( TRIM CHECK POWER ) TEMP = 15 C )
( ( 92% RPM ) BAR PRESS = .760 M HG )
( ( BOTH ENGINES ) REL HUMID = 70 % )
( ( FREE FLOW ) )
( T-37B AIRCRAFT )
( J69-T-25 ENGINE )
( FAR FIELD NOISE )
(-----)
( PAGE 19 )
```



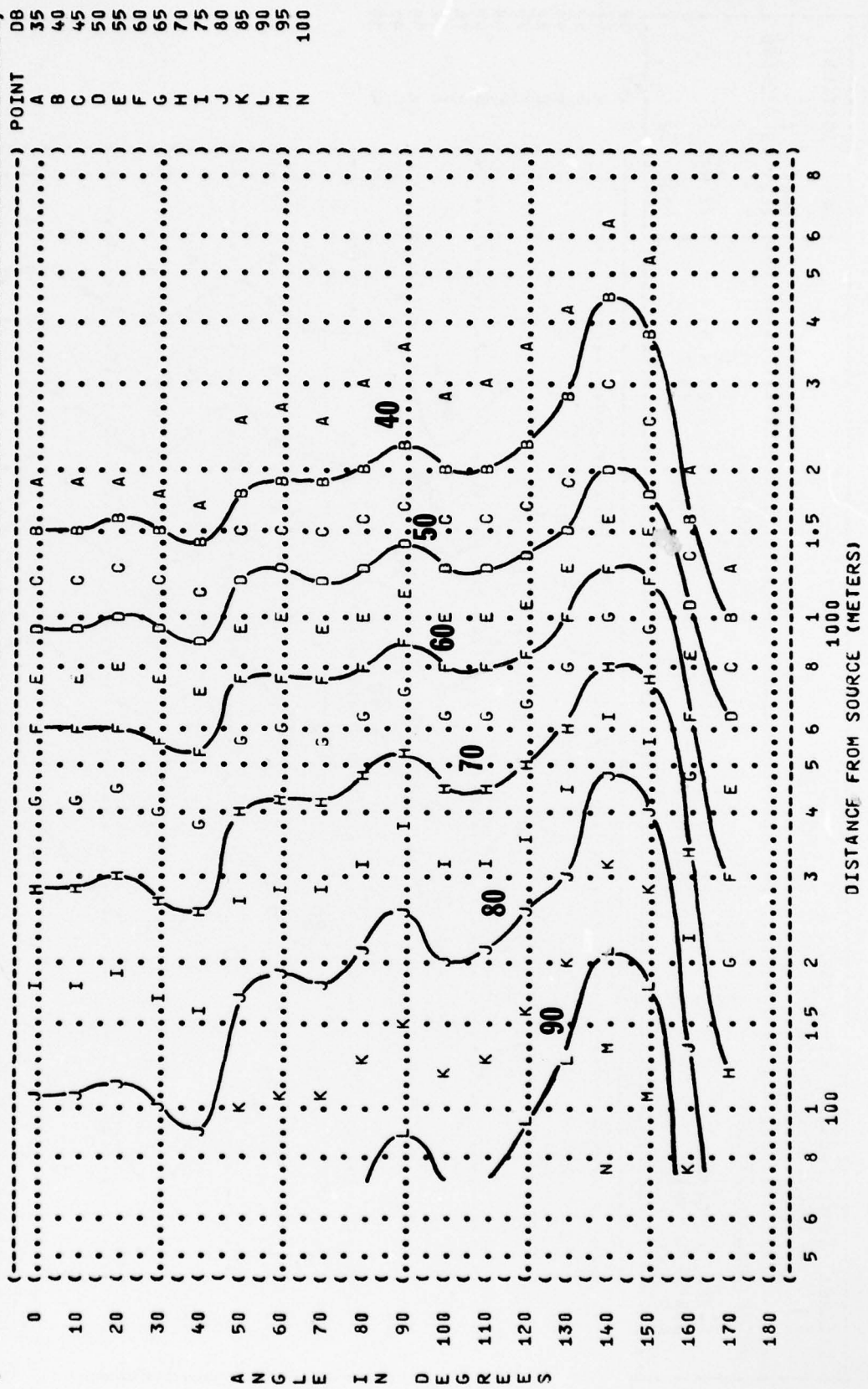
AZUJE HZ DEGRWWS



FIGURE: SOUND PRESSURE LEVEL (SPL)  
 EQUAL LEVEL CONTOURS (DB)  
 125 HZ OCTAVE BAND  
**11**  
 NOISE SOURCE/SUBJECT: ( ) OPERATION: ( ) METEOROLOGY: ( )  
 ( ) TRIM CHECK POWER ( ) TEMP = 15 C  
 ( ) 92% RPM ( ) BAR PRESS = .760 M HG  
 ( ) BOTH ENGINES ( ) REL HUMID = 70 %  
 ( ) FREE FLOW ( )  
 T-37B AIRCRAFT  
 J69-T-25 ENGINE  
 FAR FIELD NOISE  
 IDENTIFICATION:  
 OMEGA 1.4  
 TEST 75-002-046  
 RUN 02  
 09 MAY 75  
 PAGE 20



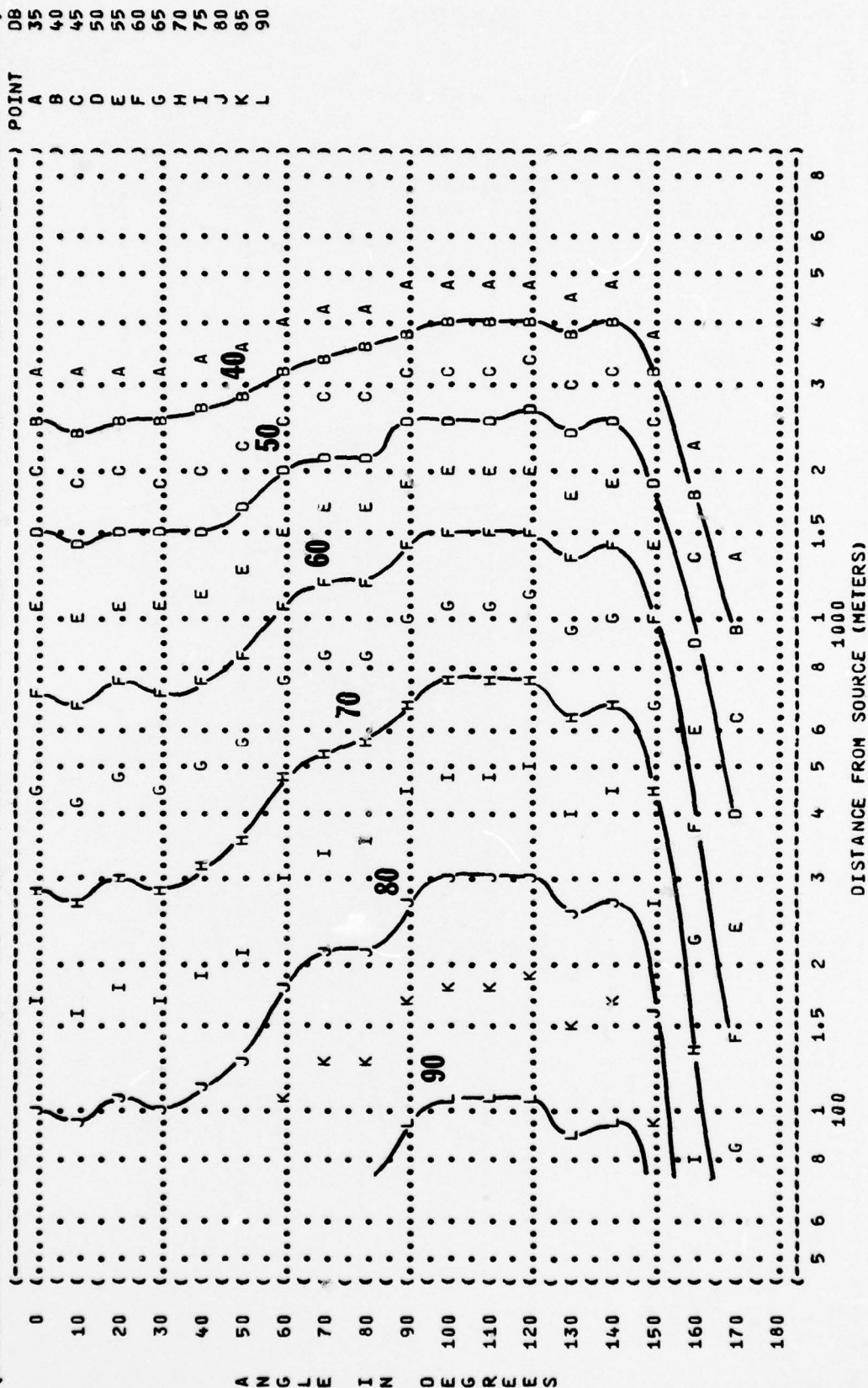
( FIGURE: SOUND PRESSURE LEVEL {SPL}  
 ( 11 EQUAL LEVEL CONTOURS (DB)  
 ( 250 HZ OCTAVE BAND  
 ( NOISE SOURCE/SUBJECT:  
 ( ( OPERATION:  
 ( ( TRIM CHECK POWER  
 ( ( 92% RPM  
 ( ( BOTH ENGINES  
 ( ( FREE FLOW  
 ( T-378 AIRCRAFT  
 ( J69-T-25 ENGINE  
 ( FAR FIELD NOISE  
 ( METEOROLOGY:  
 ( TEMP = 15 C  
 ( BAR PRESS = .760 M HG  
 ( REL HUMID = 70 %  
 ( PAGE 21  
 ( IDENTIFICATION:  
 ( OMEGA 1.4  
 ( TEST 75-002-046  
 ( RUN 02  
 ( 09 MAY 75  
 ( )





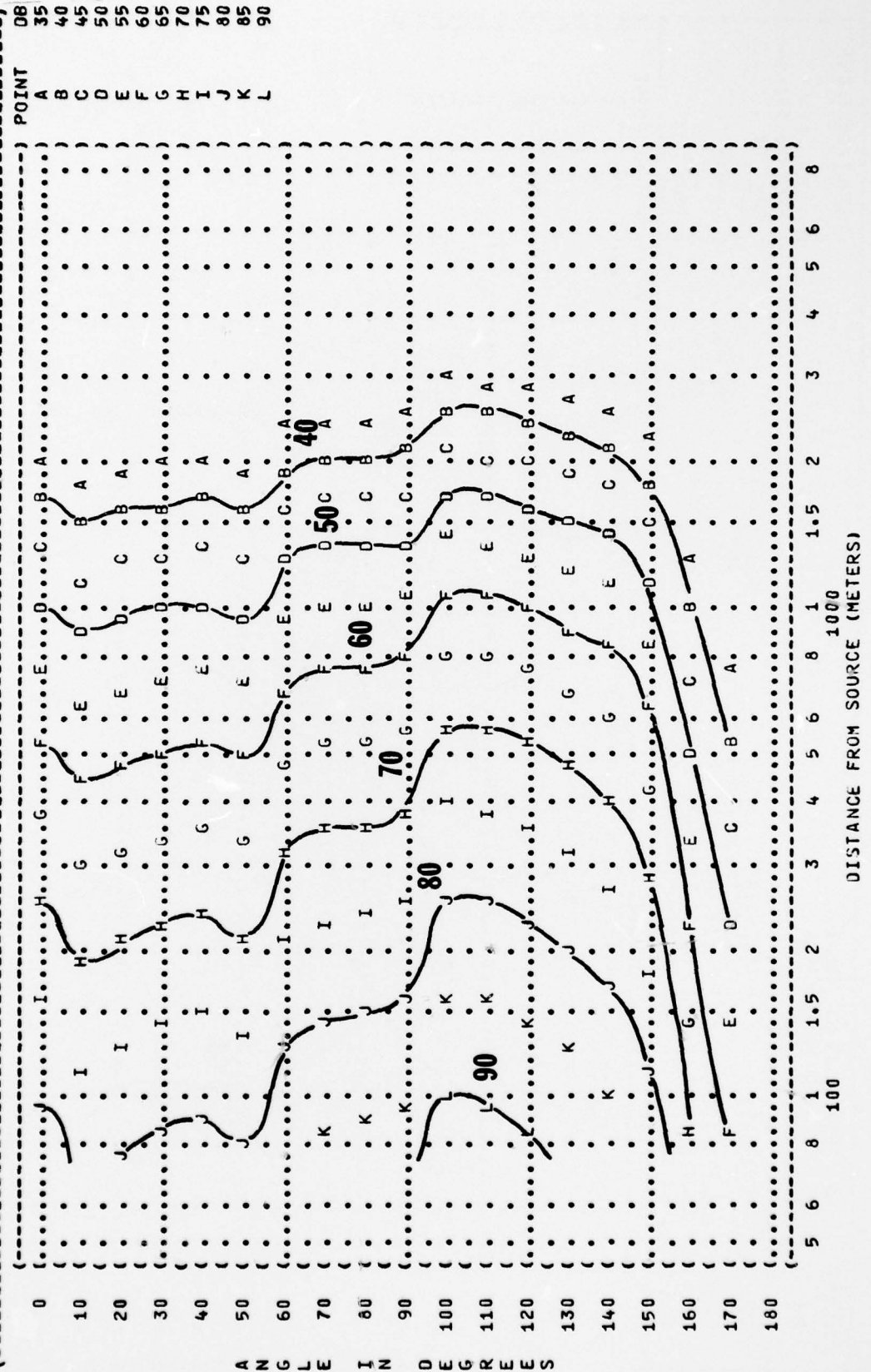


( FIGURE: SOUND PRESSURE LEVEL (SPL)  
 ( 11 EQUAL LEVEL CONTOURS (DB)  
 ( 1000 HZ OCTAVE BAND  
 ( NOISE SOURCE/SUBJECT: ( OPERATION:  
 ( T-37B AIRCRAFT ( TRIM CHECK POWER  
 ( J69-T-25 ENGINE ( 92% RPM  
 ( FAR FIELD NOISE ( BOTH ENGINES  
 ( ( FREE FLOW  
 ( METEOROLOGY:  
 ( TEMP = 15 C  
 ( BAR PRESS = .760 M HG  
 ( REL HUMID = 70 %  
 ( IDENTIFICATION:  
 ( OMEGA 1.4  
 ( TEST 75-002-046  
 ( RUN 02  
 ( 09 MAY 75  
 ( PAGE 23





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(-----)
( FIGURE: SOUND PRESSURE LEVEL {SPL} ) IDENTIFICATION# )
( 11 EQUAL LEVEL CONTOURS (DB) ) )
( 2000 HZ OCTAVE BAND ) OMEGA 1.4 )
(-----)
( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )
( T-37B AIRCRAFT ) TRIM CHECK POWER ) TEMP = 15 C )
( J69-T-25 ENGINE ) 92% RPM ) BAR PRESS = .760 M HG )
( FAR FIELD NOISE ) BOTH ENGINES ) REL HUMID = 70 % )
( FREE FLOW ) ) PAGE 24 )
(-----)
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( FIGURE: SOUND PRESSURE LEVEL (SPL)  
 ( II EQUAL LEVEL CONTOURS (DB)  
 ( 8000 HZ OCTAVE BAND  
 ( NOISE SOURCE/SUBJECT:  
 ( ( OPERATION:  
 ( ( TRIM CHECK POWER  
 ( ( 92% RPM  
 ( ( BOTH ENGINES  
 ( ( FREE FLOW  
 ( T-378 AIRCRAFT  
 ( J69-T-25 ENGINE  
 ( FAR FIELD NOISE  
 ( METEOROLOGY:  
 ( TEMP = 15 C  
 ( BAR PRESS = .760 M HG  
 ( REL HUMID = 70 %  
 ( IDENTIFICATION:  
 ( OMEGA 1.4  
 ( TEST 75-002-046  
 ( RUN 02  
 ( 09 MAY 75  
 ( PAGE 26

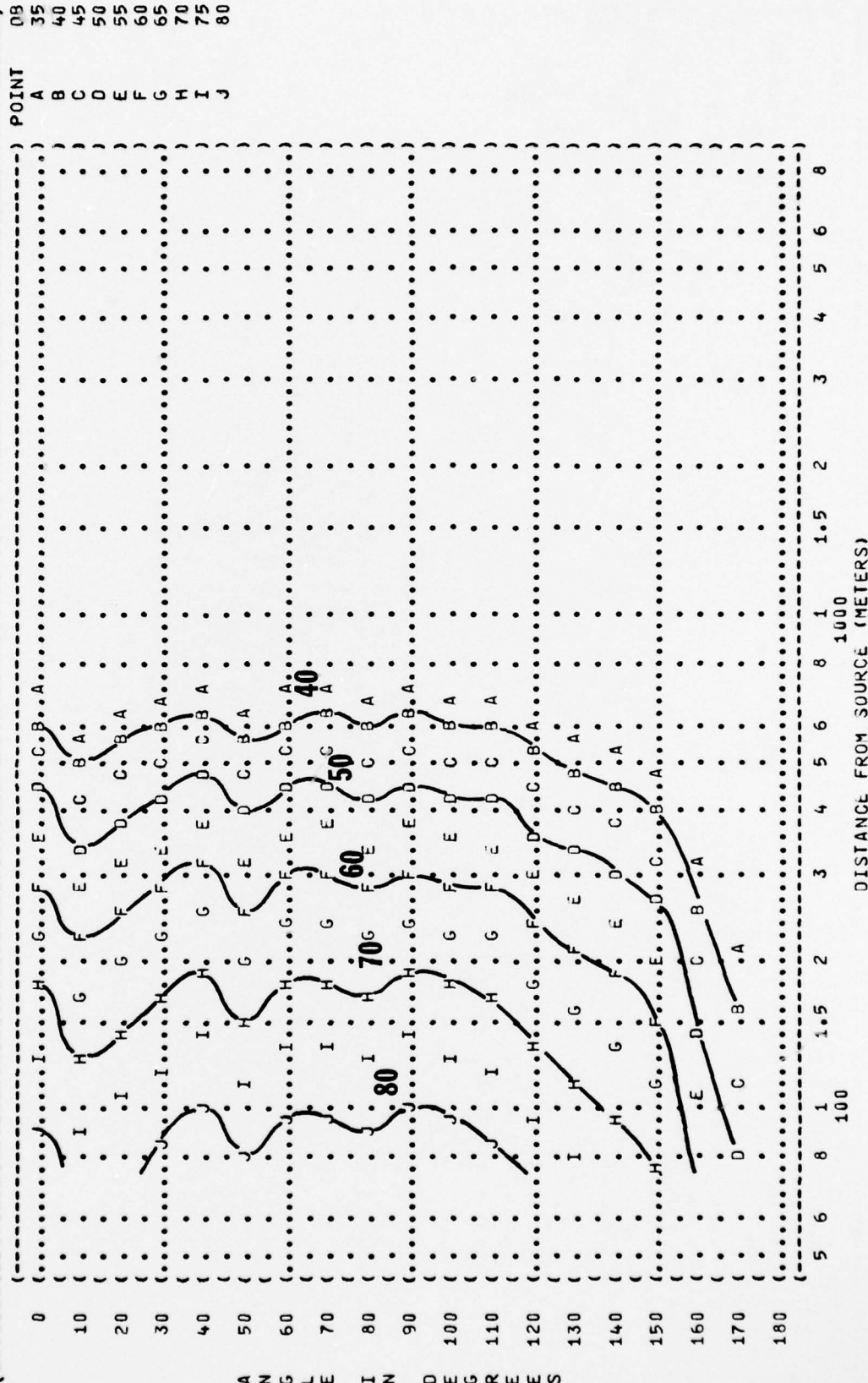




FIGURE 11: SOUND PRESSURE LEVEL {SPL} EQUAL LEVEL CONTOURS (DB) 31.5 HZ OCTAVE BAND

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( ( FIGURE: SOUND PRESSURE LEVEL {SPL} ) IDENTIFICATION: )
( ( EQUAL LEVEL CONTOURS (DB) ) )
( ( 11 ----- ) )
( ( 31.5 HZ OCTAVE BAND ) )
( ( NOISE SOURCE/SUBJECT: ) METEOROLOGY: )
( ( OPERATION: ) TEMP = 15 C )
( ( MILITARY POWER ) BAR PRESS = .760 M HG )
( ( T-37B AIRCRAFT ) 99.5% RPM ) 09 MAY 75 )
( ( J69-T-25 ENGINE ) BOTH ENGINES ) )
( ( FAR FIELD NOISE ) FREE FLOW ) PAGE 18 )
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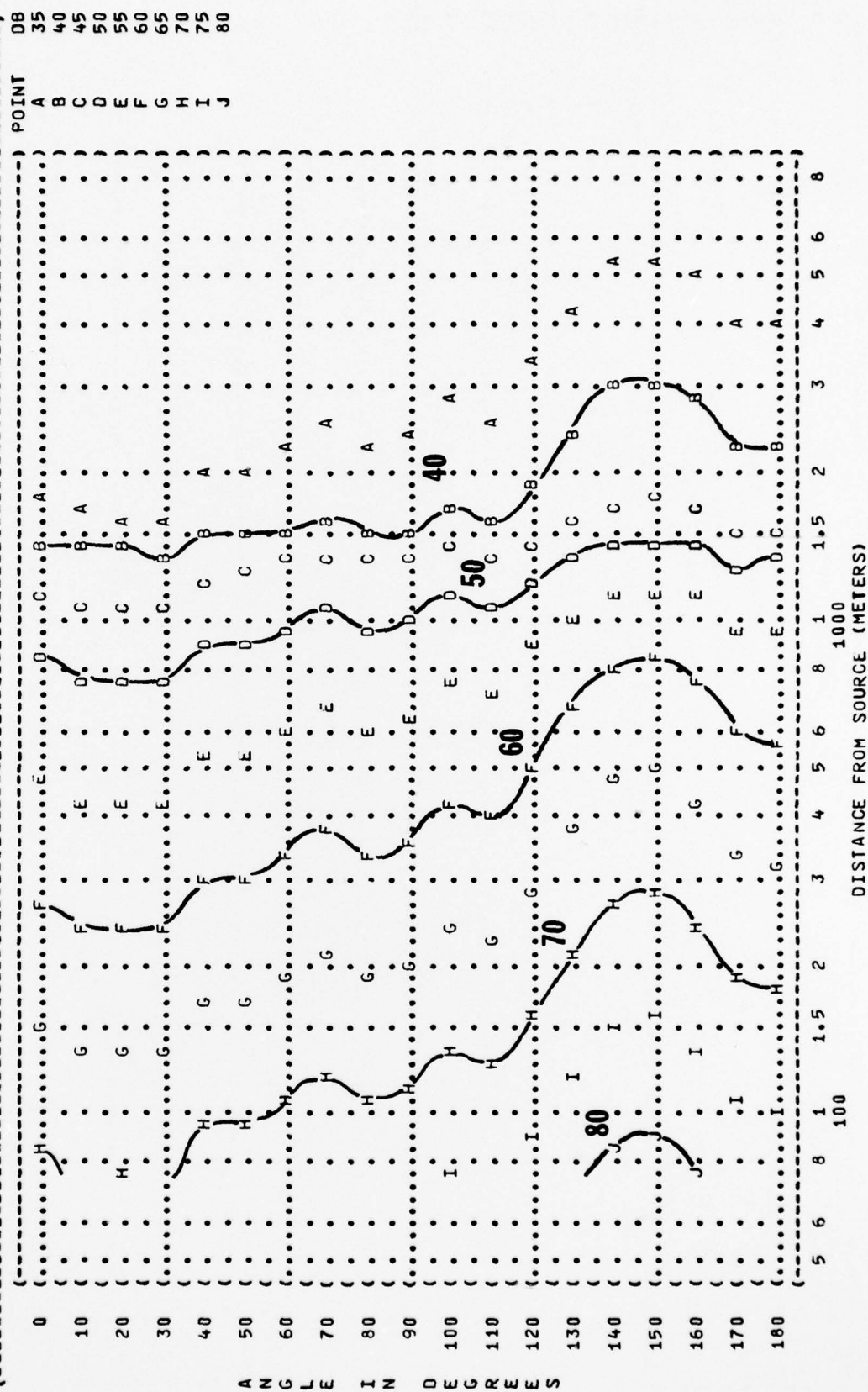




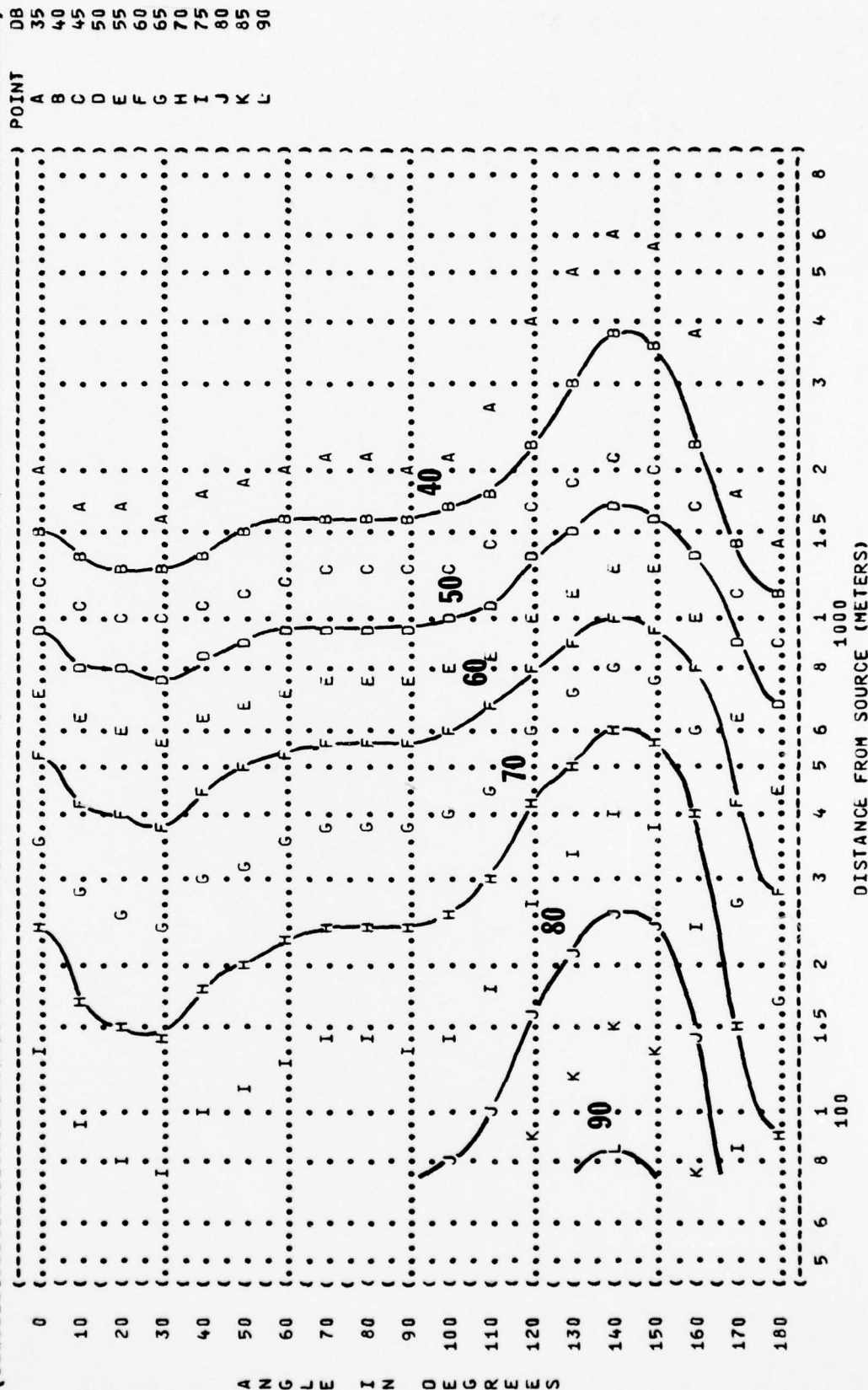
FIGURE: SOUND PRESSURE LEVEL (SPL)  
 11 EQUAL LEVEL CONTOURS (DB)  
 63 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT: T-37B AIRCRAFT  
 J69-T-25 ENGINE  
 FAR FIELD NOISE

OPERATION: MILITARY POWER  
 99.5% RPM  
 BOTH ENGINES  
 FREE FLOW

METEOROLOGY: TEMP = 15 C  
 BAR PRESS = .760 M HG  
 REL HUMID = 70 %

IDENTIFICATION: OMEGA 1.4  
 TEST 75-002-046  
 RUN 03  
 09 MAY 75  
 PAGE 19



( FIGURE: SOUND PRESSURE LEVEL (SPL)  
 ( 11 EQUAL LEVEL CONTOURS (DB)  
 ( 125 HZ OCTAVE BAND  
 ( NOISE SOURCE/SUBJECT:  
 ( ( OPERATION:  
 ( ( MILITARY POWER  
 ( ( 99.5% RPM  
 ( ( BOTH ENGINES  
 ( ( FREE FLOW  
 ( T-37B AIRCRAFT  
 ( J69-T-25 ENGINE  
 ( FAR FIELD NOISE  
 ( METEOROLOGY:  
 ( TEMP = 15 C  
 ( BAR PRESS = .760 M HG  
 ( REL HUMID = 70 %  
 ( IDENTIFICATION:  
 ( OMEGA 1.4  
 ( TEST 75-002-046  
 ( RUN 03  
 ( 09 MAY 75  
 ( PAGE 20

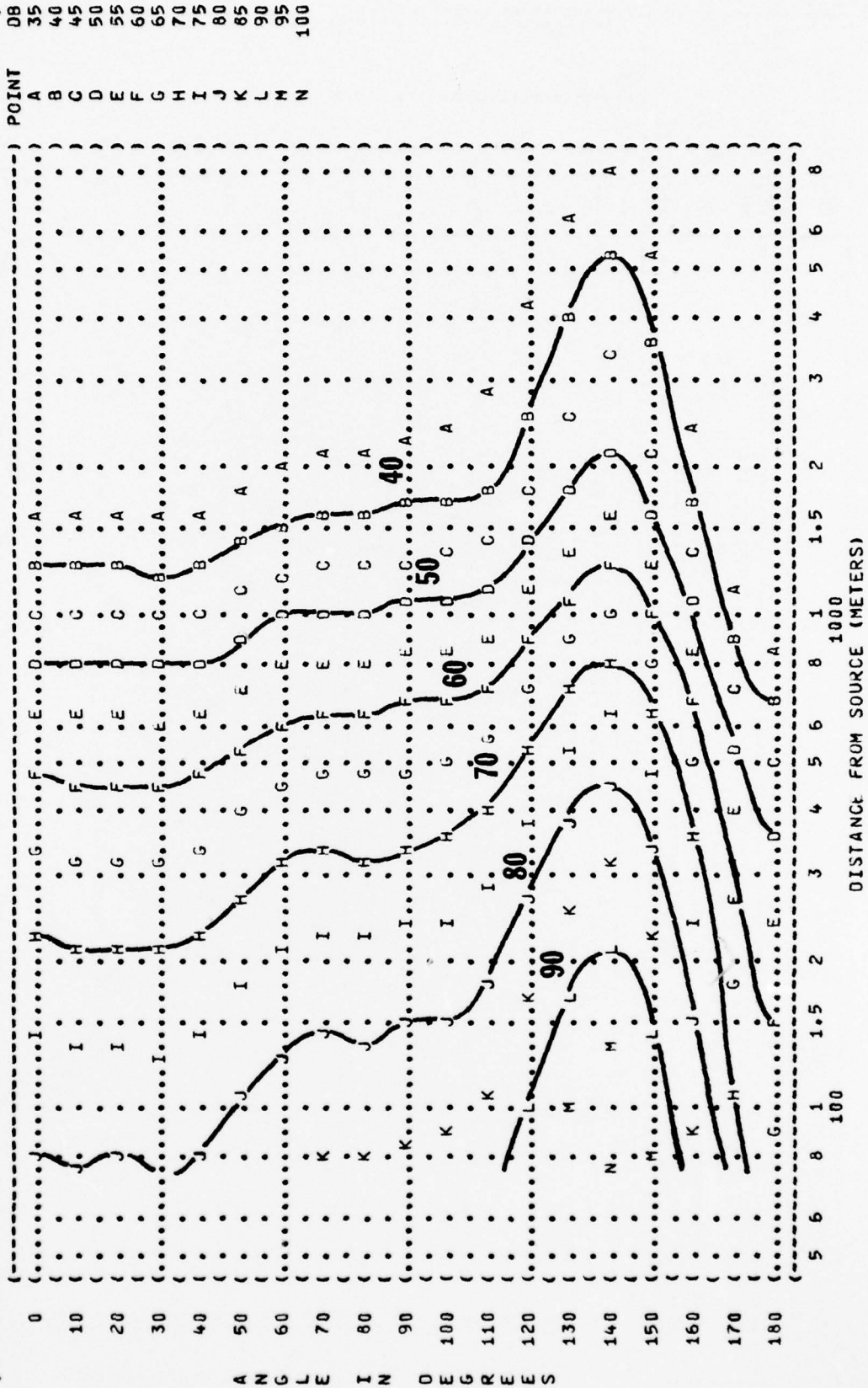
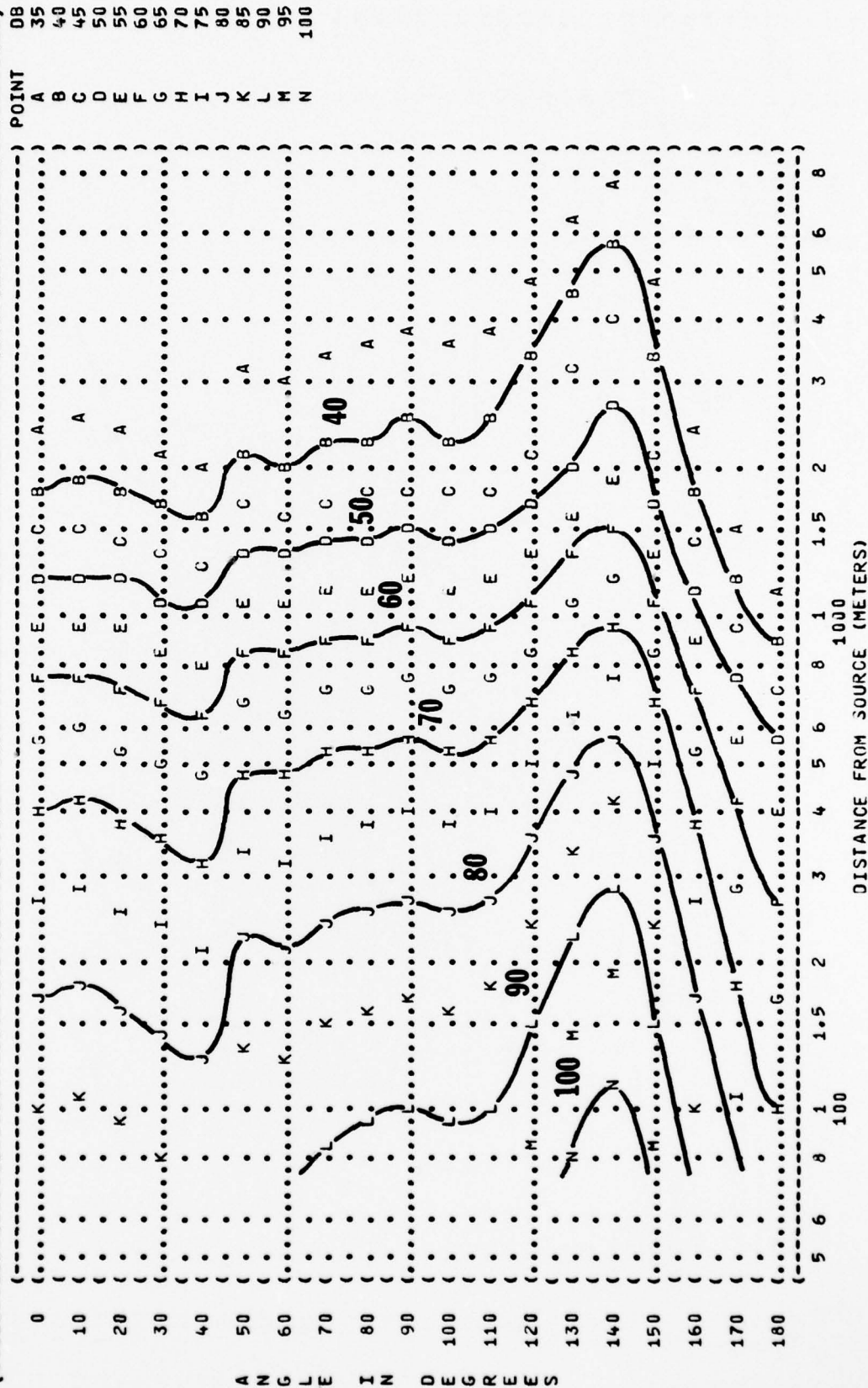


FIGURE: SOUND PRESSURE LEVEL (SPL)  
 11 EQUAL LEVEL CONTOURS (DB)  
 250 HZ OCTAVE BAND

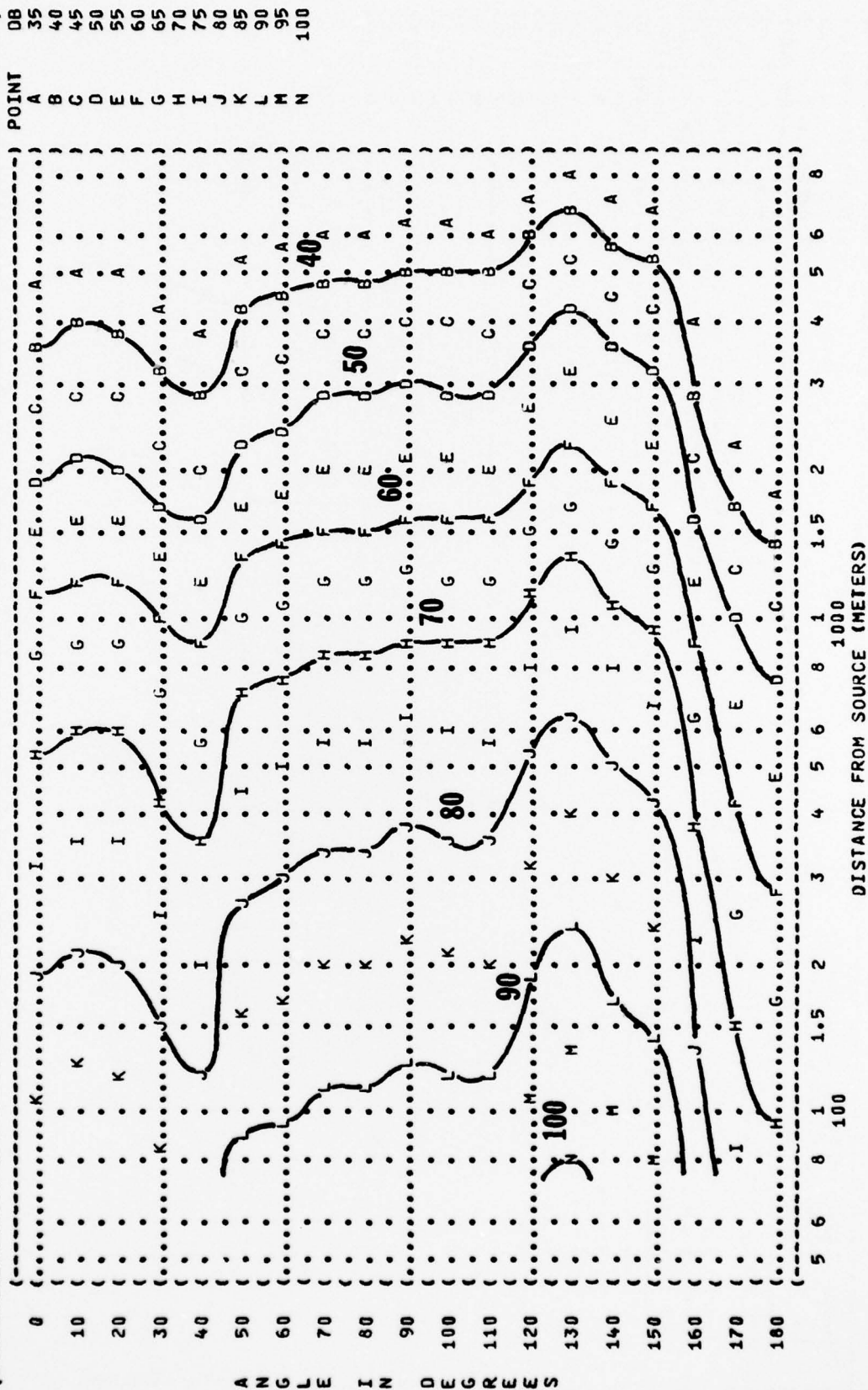
NOISE SOURCE/SUBJECT: ( OPERATION: ) METEOROLOGY: )  
 ( ( MILITARY POWER ) TEMP = 15 C )  
 ( ( 99.5% RPM ) BAR PRESS = .760 M HG )  
 ( ( BOTH ENGINES ) REL HUMID = 70 % )  
 ( ( FREE FLOW ) )  
 T-37B AIRCRAFT  
 J69-T-25 ENGINE  
 FAR FIELD NOISE

IDENTIFICATION: )  
 )  
 ) OMEGA 1.4  
 ) TEST 75-002-046  
 ) RUN 03  
 )  
 ) 09 MAY 75  
 )  
 ) PAGE 21  
 )



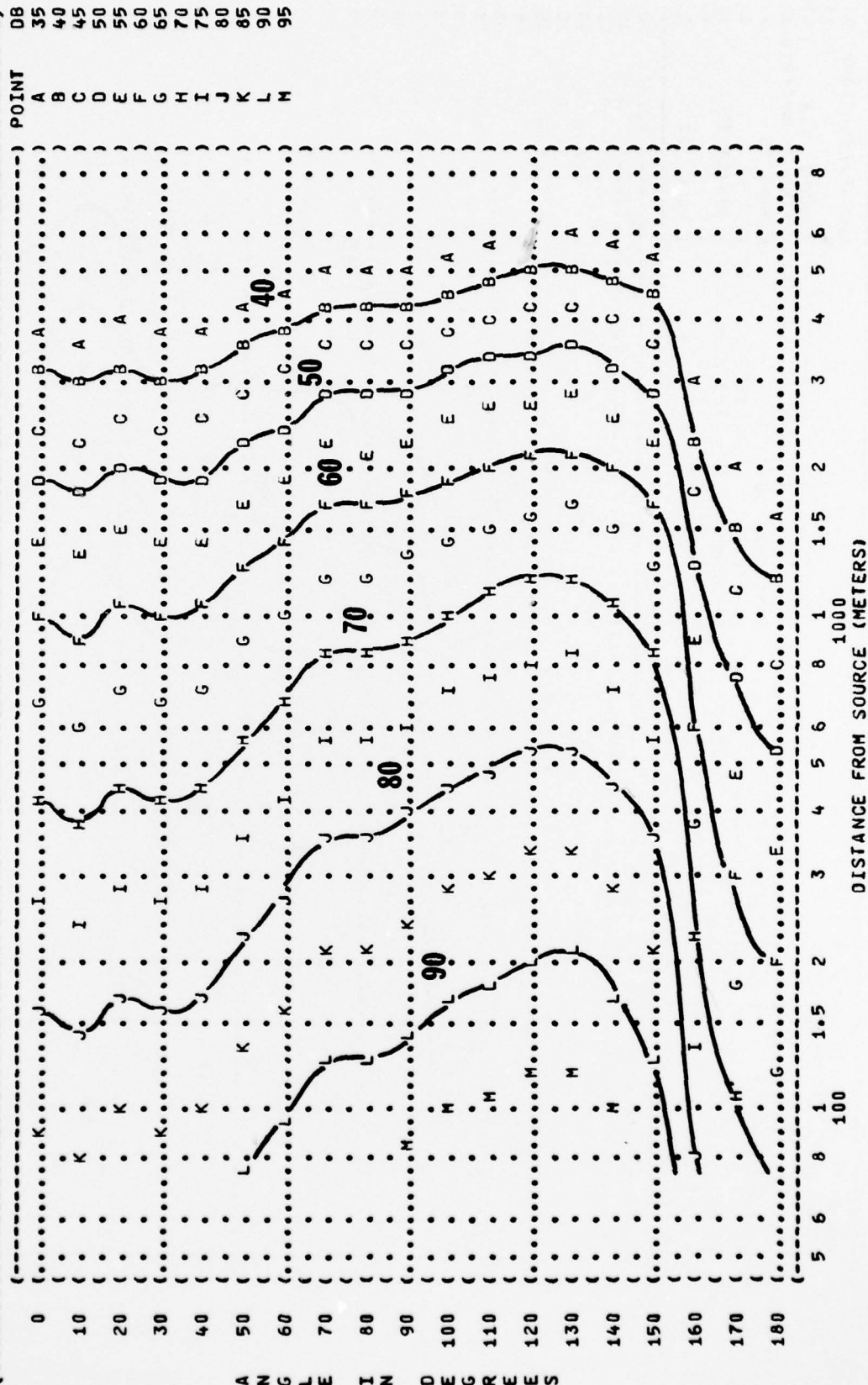


( FIGURE: SOUND PRESSURE LEVEL (SPL)  
 ( 11 EQUAL LEVEL CONTOURS (DB)  
 ( 500 HZ OCTAVE BAND  
 ( NOISE SOURCE/SUBJECT: ( OPERATIONS:  
 ( ( MILITARY POWER  
 ( ( 99.5% RPM  
 ( ( BOTH ENGINES  
 ( ( FAR FIELD NOISE  
 ( ( FREE FLOW  
 ( METEOROLOGY:  
 ( TEMP = 15 C  
 ( BAR PRESS = .760 M HG  
 ( REL HUMID = 70 %  
 ( IDENTIFICATION:  
 ( OMEGA 1.4  
 ( TEST 75-002-046  
 ( RUN 03  
 ( 09 MAY 75  
 ( PAGE 22



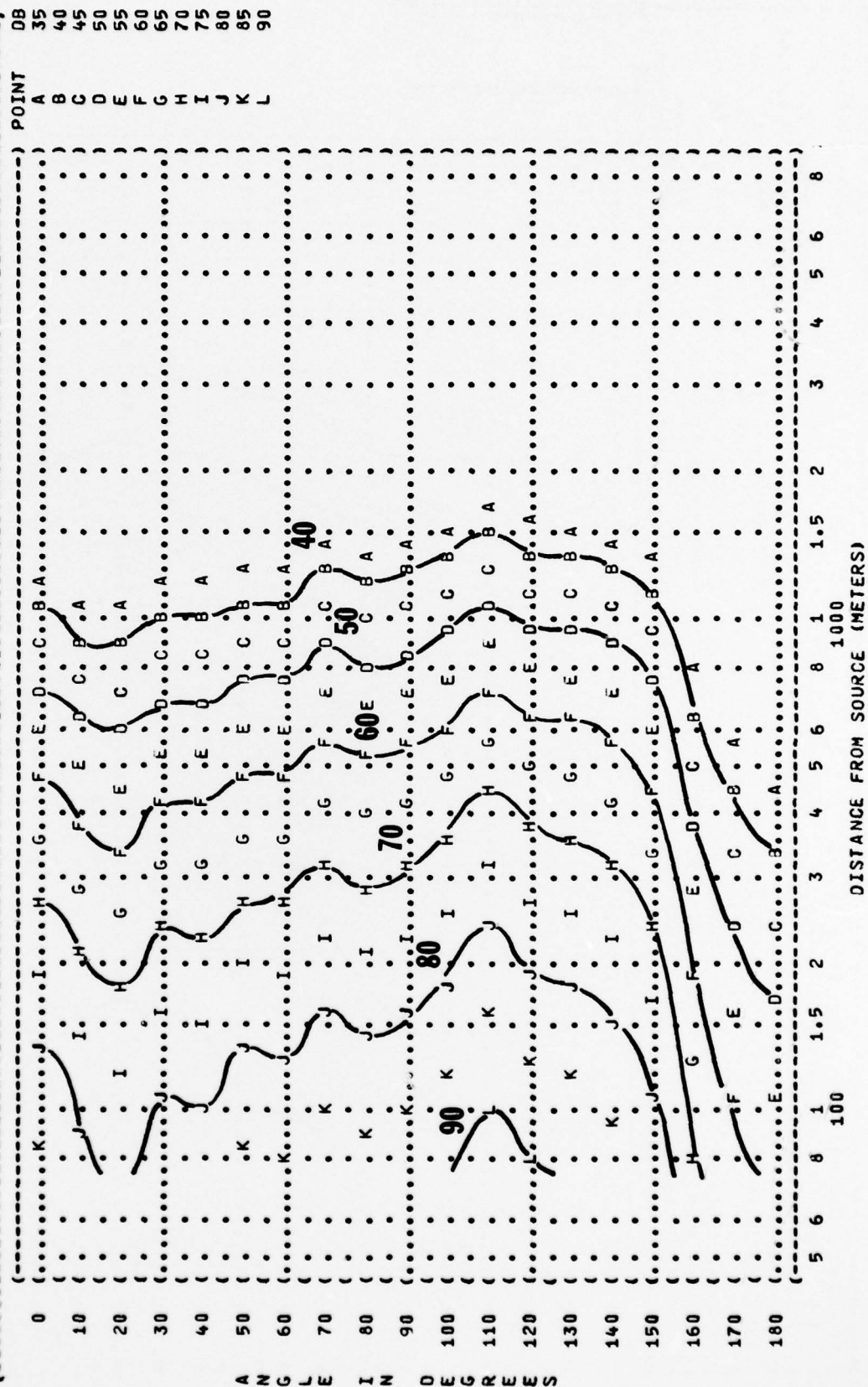


( FIGURE: SOUND PRESSURE LEVEL (SPL)  
 ( 11 EQUAL LEVEL CONTOURS (DB)  
 ( 1000 HZ OCTAVE BAND  
 ( NOISE SOURCE/SUBJECT: ( OPERATION:  
 ( T-378 AIRCRAFT ( MILITARY POWER  
 ( J69-I-25 ENGINE ( 99.5% RPM  
 ( FAR FIELD NOISE ( BOTH ENGINES  
 ( ( FREE FLOW  
 ( METEOROLOGY:  
 ( TEMP = 15 C  
 ( BAR PRESS = .760 M HG  
 ( REL HUMID = 70 %  
 ( IDENTIFICATION:  
 ( OMEGA 1.4  
 ( TEST 75-002-046  
 ( RUN 03  
 ( 09 MAY 75  
 ( PAGE 23



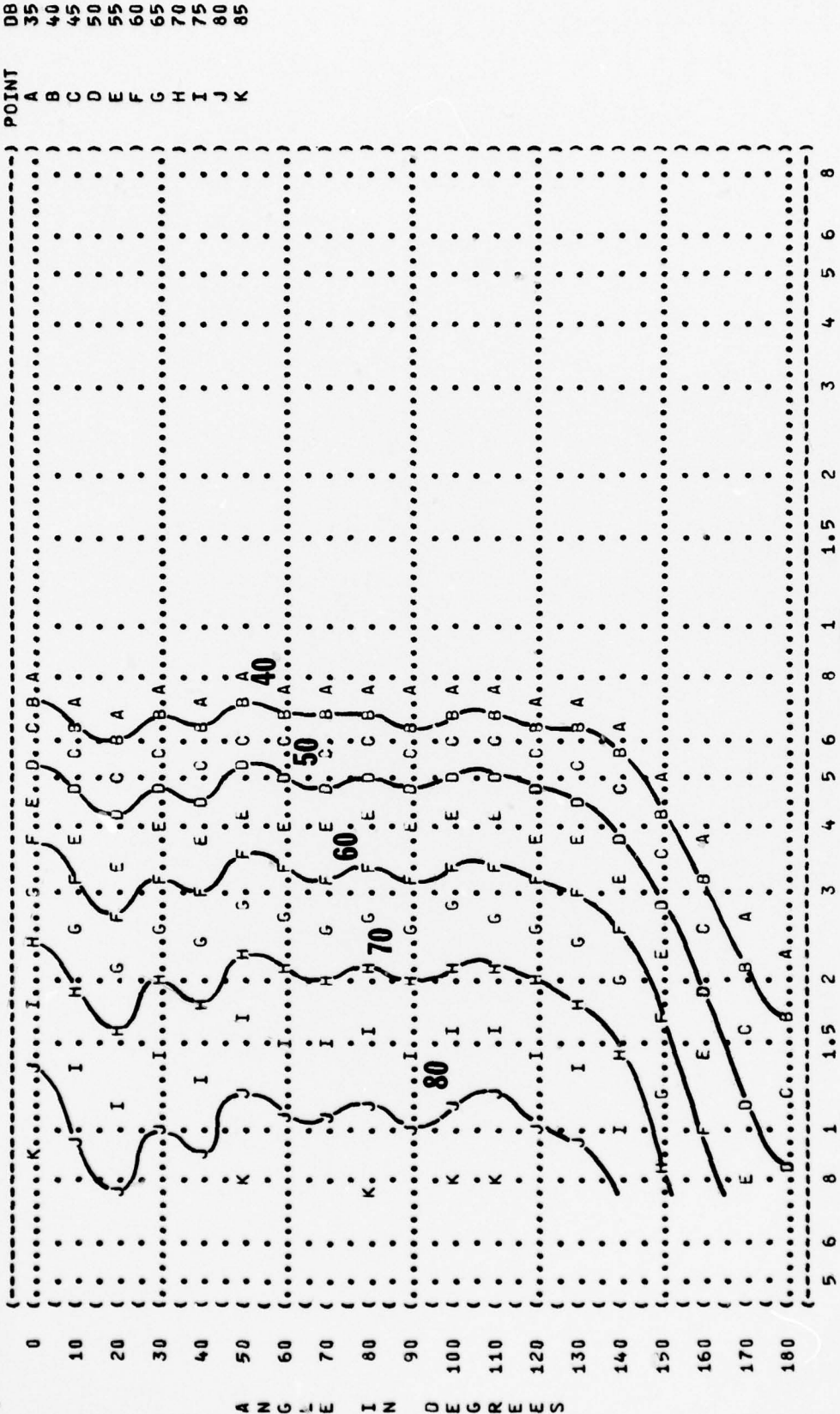


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(-----)
( FIGURE: SOUND PRESSURE LEVEL {SPL} ) IDENTIFICATION: )
( EQUAL LEVEL CONTOURS ) )
( 11 ) OMEGA 1.4 )
( 4000 HZ OCTAVE BAND ) TEST 75-002-046 )
( NOISE SOURCE/SUBJECT: ) RUN 03 )
( OPERATION: ) METEOROLOGY: )
( MILITARY POWER ) TEMP = 15 C )
( 99.5% RPM ) BAR PRESS = .760 M HG )
( BOTH ENGINES ) REL HUMID = 70 % )
( FREE FLOW ) ) PAGE 25 )
(T-378 AIRCRAFT )
(J69-I-25 ENGINE )
(FAR FIELD NOISE )
```





( ( FIGURE: SOUND PRESSURE LEVEL (SPL) ) IDENTIFICATION: )  
 ( ( 11 EQUAL LEVEL CONTOURS (DB) ) )  
 ( ( 8000 HZ OCTAVE BAND ) )  
 ( ( NOISE SOURCE/SUBJECT: ) )  
 ( ( T-378 AIRCRAFT ) )  
 ( ( J69-T-25 ENGINE ) )  
 ( ( FAR FIELD NOISE ) )  
 ( ( OPERATION: ) )  
 ( ( MILITARY POWER ) )  
 ( ( 99.5% RPM ) )  
 ( ( BOTH ENGINES ) )  
 ( ( FREE FLOW ) )  
 ( ( METEOROLOGY: ) )  
 ( ( TEMP = 15 C ) )  
 ( ( BAR PRESS = .760 M HG ) )  
 ( ( REL HUMID = 70 % ) )  
 ( ( TEST 75-002-046 ) )  
 ( ( RUN 03 ) )  
 ( ( PAGE 26 ) )



A N G L E I N D E G R E E S